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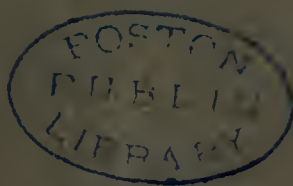
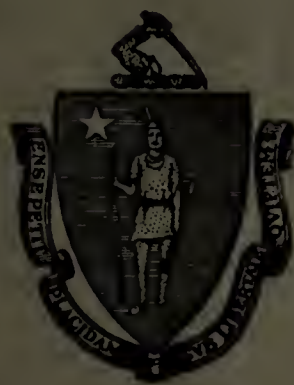
The Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

METROPOLITAN DISTRICT COMMISSION

FOR THE YEAR 1932



CONTENTS

	PAGE
I. Organization and Administration	1
Commission, Officers and Employees	1
II. General Financial Statement	1
III. Construction	1
IV. Parks and Reservations	3
V. Police	4
VI. Rainfall and Consumption of Water	4
VII. Special Investigations	4
VIII. Other Reports	5
Report of the Associate Civil Engineer of Park Engineering	6
Organization	6
Construction and Maintenance Work	6
Charles River Basin	6
Mystic Valley Parkway	7
Middlesex Fells Parkway	7
Hammond Pond Parkway	7
Nantasket Beach Reservation	7
Neponset River Reservation	7
Resurfacing of Parkways and Boulevards	7
Bridge Repairs	8
Miscellaneous	8
Plans, Studies and Estimates	9
Plans for Takings and Conveyances	9
Lighting of Parkways and Boulevards	10
Traffic Control Signals	10
Permits	10
Ice-Breaking in Basin	11
Financial	11
Data relating to Metropolitan Park System	12
Report of Director and Chief Engineer of Water Division	15
Organization	15
Metropolitan Water District and Works	16
Construction	16
Weston Aqueduct Supply Mains	16
Northern High Service Pipe Lines	16
Additional Pumping Equipment for Chestnut Hill Station No. 1	16
Meters and Connections	17
Purchase of Special Castings	17
Maintenance	17
Precipitation and Yield of Watersheds	17
Storage Reservoirs	17
Wachusett Reservoir	18
Sudbury Reservoir	18
Framingham Reservoir No. 3	18
Ashland, Hopkinton and Whitehall Reservoirs	19
Framingham Reservoir Nos. 1 and 2 and Farm Pond	19
Lake Cochituate	19
Aqueducts	19
Protection of the Water Supply	20
Clinton Sewage Disposal Works	22
Forestry	22
Hydroelectric Service	22
Wachusett Station	22
Sudbury Station	23
Distribution Pumping Stations	24
Distribution Reservoirs	25
Distribution Pipe Lines	25
Consumption of Water	26
Water from Metropolitan Water Works Sources used Outside of the Metropolitan Water District	28

Mass Secretary of the Commonwealth

	PAGE
Report of Director and Chief Engineer of Sewerage Division	29
Organization	29
Obituary	29
Metropolitan Sewerage Districts	29
Areas and Populations	29
Metropolitan Sewers	30
Sewers Purchased and Constructed and Their Connections	30
Construction	34
North Metropolitan Sewerage System	34
Extension of Mill Brook Valley Sewer in Arlington	34
South Metropolitan Sewerage System	34
Extension of High-Level Sewer in Brighton and Newton	34
Section 87, High-Level Sewer in Brighton and Newton	34
New Neponset Valley Sewer	35
Section 109 (Part of)	35
Section 110 (Part of)	35
Section 114	35
Section 117	35
Section 118	35
Section 119	35
Section 120	35
Section 121	35
Squantum Pumping Station – Quincy	35
Braintree-Weymouth Branch	35
Section 125	35
Section 123	35
Section 124	35
Section 122	36
Braintree-Weymouth Pumping Station – Quincy	36
Pumping Equipment for Braintree-Weymouth Pumping Sta.	36
Maintenance	37
Scope of Work and Force Employed	37
East Boston Pumping Station	37
Deer Island Pumping Station	37
Quincy Pumping Station	37
Squantum Pumping Station	38
Hough's Neck Pumping Station	38
Gasolene in Public Sewers	38
Data relating to Areas and Populations contributing Sewage	
to Metropolitan Sewerage Systems	40
North Metropolitan System	40
South Metropolitan System	41
Whole Metropolitan System	42
Pumping Stations	43
Capacities and Results	43
North Metropolitan System	43
South Metropolitan System	43
Metropolitan Sewerage Outfalls	45
Material intercepted at the Screens	45
Financial Statement	46
Parks Division	46
Sewerage Division	63
Water Division	70
Appendix No. 1 — Contracts relating to the Metropolitan Parks Division made and pending during the year 1932	74
Appendix No. 2 — Contracts relating to the Metropolitan Water Works made and pending during the year 1932	76
Appendix No. 3 — Tables relating to the maintenance of the Metropolitan Water Works	80
Appendix No. 4 — Contracts relating to the Metropolitan Sewerage Works made and pending during the year 1932	106

REPORT OF THE METROPOLITAN DISTRICT COMMISSION

*To the Honorable the Senate and House of Representatives of the
Commonwealth of Massachusetts in General Court assembled.*

The Metropolitan District Commissioner has already presented to your Honorable Body an abstract of the account of the receipts, expenditures, disbursements and liabilities of the Metropolitan District Commission for the fiscal year ending on November 30, 1932, and now, in accordance with the provisions of section 100 of chapter 92 of the General Laws, presents a detailed statement of its doings for the calendar year ending on December 31, 1932.

THIRTEENTH ANNUAL REPORT

I. Organization and Administration

COMMISSION, OFFICERS AND EMPLOYEES

The term of office of William F. Rogers expired on November 30, 1932, but as yet no appointment has been made. The membership of the Commission has consequently remained as in the preceding year: Davis B. Keniston, Commissioner, George B. Wason, William F. Rogers, Charles H. J. Kimball and Melvin B. Breath, Associate Commissioners.

William E. Whittaker has continued as Secretary of the Commission, William E. Foss as Director and Chief Engineer of the Water Division and Frederick D. Smith as Director and Chief Engineer of the Sewerage Division. Edwin H. Rogers, who for the past four years had been Director and Chief Engineer of Park Engineering died on March 6, 1932. At the end of the year no one had been appointed to this position.

The maximum number of employees during the year was 1,705, divided as follows: general offices, 47; parks 990; water, 411; sewerage, 257.

II. General Financial Statement

Year ending November 30, 1932

Expended for construction	\$1,359,681.90
Expenditures, miscellaneous	151,363.35
Expenditures for maintenance	4,304,198.74
Total expenditures	5,815,243.99
Unexpended balance, maintenance appropriations	1,478,229.09
Serial bonds and notes issued	965,000.00
Serial bonds and notes paid	868,687.50
Increase in sinking funds	2,289,139.97
Decrease in net debt	2,192,827.47

On November 30, 1932

Net debt	\$26,750,542.55
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III. Construction

During the year Sections 109, 110, 114, 117, 118, 119 and 120 of the New Neponset Valley Sewer were completed, connections were made with the towns of Norwood and Walpole and the line to these towns was put in operation. The contract for the remaining Section 121 was awarded in March. The line has been completed as far as Washington Street, Canton, and is ready for the town of Canton to connect its sewers to this point, and the entire line will be completed early in the coming year.

Section 125 of the Braintree-Weymouth sewer started in 1931, had been practically completed by the end of the year. Contracts for the construction of the remaining sections of this line, Sections 122, 123 and 124 were let during the year. Section 123 has been completed, and substantial progress has been made toward completion of the other sections. A contract has been awarded for furnishing the pumping equipment for the Braintree-Weymouth Pumping station and bids were received for the construction of the foundations and substructure work of the station. The entire line should be completed and put in operation during the coming year.

The extension of the Metropolitan Sewer in Mill or Sucker Brook Valley from Forest street to Park street, Arlington, a distance of 2,126 feet, started late in 1931, was completed and put in operation June 1, 1932.

A contract for the extension of the High Level Sewer from its present terminus in Oak Square, Brighton to the Brighton-Newton line, a distance of 1,960 feet, was let late in the year.

The Squantum Pumping station in Quincy was completed and put in operation during the month of September.

A new 15,000,000 gallon DeLaval pump has been installed in the Quincy Pumping station, to replace an existing 5,000,000 gallon pump.

The new Weston Aqueduct supply main was completed during the year by the laying of 9,200 feet of 60-inch steel pipe from Elm street to the Charles River at Commonwealth avenue in Newton, where connections were made with the two northerly of the three 60-inch mains that were laid in 1903 under the river just below the Weston bridge.

The work of installing two new pumping units at the Chestnut Hill station has been in progress during the year. These consist of two centrifugal pumping units, one of 1,400 horse power and pumping capacity of 50 million gallons a day and the other of 620 horse power and pumping capacity of 15 million gallons a day. At the close of the year the small unit was erected on the foundation at the station and the large unit had been delivered at the station ready for erection. In connection with the installation of these new pumping units a new vertical fire tube boiler 98 inches in diameter has been erected at Station No. 1.

Venturi meters have been installed between the No. 4 Weston Aqueduct supply main and the city of Newton and town of Watertown distribution pipes in Centre and Galen streets at the Newton and Watertown boundary line and two meters have been purchased for installation on the force main at Chestnut Hill Pumping Station No. 1.

The contract for the filling of the area along the Charles River from the Dam to Cottage Farm Bridge started in 1931, was continued throughout the year. Most of the filling had been completed by the end of the year, a considerable part of the shaping of the shores was finished and the entire area should be ready to start the loaming, planting and other improvements in the spring of the coming year. A contract was awarded late in the year for the improvement of the area from Longfellow Bridge to the Union Boat Club including the steps at the Boat Haven, and the work was in progress at the end of the year. The following contracts in the Parks Division, started in 1931, were completed during the year:

The Ponkapoag golf course, locker and professional buildings at Redman Farm, Canton.

The traffic control signals at the Larz Anderson, Western Avenue and River Street bridge approach intersections with Charles River Road in Boston and Memorial Drive in Cambridge.

Shore protection at Revere Beach Reservation.

Grading and steps, northerly side of Bunker Hill Monument grounds, Charlestown.

Relocation of Bold Knob Road, Stony Brook Reservation, Boston.

Underpass at the junction of Memorial Drive and Massachusetts Avenue, Cambridge.

Concrete floor and steel superstructure for Revere Beach Parkway bridge over the Boston, Revere Beach and Lynn Railroad, Revere.

Nonantum Road extension from Hyde Brook, Newton to Water Street, Watertown.

The addition to the Revere Beach police station and the skating shelter at Belcher Brook pond, Blue Hills Reservation.

The following contracts for construction in the Parks Division were awarded and completed or substantially completed during the year:

The construction of Hammond Pond Parkway from Hammond Street, Brookline to Boylston Street, Newton, with a traffic circle at the junction of Hammond and Newton streets.

A traffic circle at the junction of South Border Road, Forest Street and Fellsway West, Medford.

The reconstruction of Nantasket Avenue, Nantasket Beach Reservation between Atlantic Hill and Bay Street, Hull.

Contracts for the excavation of soft material and refilling to grade of Mystic Valley Parkway from Revere Beach Parkway to Mystic Avenue at Harvard Street, Medford and for the reconstruction of Paul's Bridge with the approaches thereto, at East Milton Street, Boston and Milton, were awarded during the latter part of the year and were in progress at the end of the year.

Revere Beach Parkway from Fellsway, Medford, to Main Street, Everett, has been widened to forty feet.

Memorial Drive between Brookline Street and Fowler Street, Cambridge has been widened to forty feet and resurfaced.

The following boulevards and parkways were resurfaced during the year with some changes in alignment and grade:

Bold Knob Road westerly 600 feet from Gordon Avenue, and Turtle Pond Road from Bold Knob Road to Dedham Parkway, Stony Brook Reservation; Chickatawbut Road from a point about 5,300 feet easterly of Randolph Avenue to the intersection of Wampatuck Road, Blue Hills Reservation; Furnace Brook Parkway, from Willard Street to Bunker Hill Lane, Quincy; Lynn Shore Reservation from Washington Street, Lynn, to Humphrey Street, Swampscott; Soldiers Field Road, Charles River Reservation, from Western Avenue to Telford Street, Boston; Middlesex Fells Parkway, easterly roadway, from Mystic Avenue to Wellington Bridge, Somerville, and Blue Hill River Road from Randolph Avenue, Quincy, to West Street, Braintree; Fellsway West between Cherry Street and Fulton Street and between Forest Street and Elm Street, Medford.

IV. Parks and Reservations

The usual work of maintenance and upkeep of parks, reservations and boulevards has been continued during the year. An appropriation of \$100,000 was made for the relief of the unemployed and about 830 men were employed during the early part of the year for cutting of brush, removal of dead wood and other work, largely in the Middlesex Fells, Blue Hills and Charles River Upper Divisions.

One hundred and seventeen band concerts were given during the summer months in the various parks and reservations at a cost of \$19,855.51. The Symphony concerts were again conducted by Mr. Arthur Fiedler on the Esplanade for four weeks during July and August. The attendance was even larger than in former years.

At the Riverside Golf Course the second nine holes built in 1931 were put in operation making a full course of eighteen holes. The course was well patronized, approximately 35,000 rounds of golf were played during the season.

Nine holes of the Ponkapoag Golf Course were opened for public use July 1, 1932 and during the remainder of the season 18,000 rounds of golf were played. The remaining nine holes, although completed, were not opened to allow the turf of the greens and tees to become more firmly established. The entire eighteen holes will be ready for use the coming season.

Extensive repairs were made to the steps and shore protection at Revere Beach Reservation and to the seawall at Lynn Shore. Construction of a small sanitary was started about half way between Nahant Beach and Little Nahant. The seawall at Winthrop was pointed and the guard fence repaired.

In the Middlesex Fells Division extensive plantings were made along the new section of Fellsway East, Lynn Fells Parkway, Mystic Valley Parkway and Alewife Brook Parkway. A new feed house and row of cages were built at the Zoo. A section of Alewife Brook near the outlet of Tannery Brook was dredged and the shore line reshaped.

A new parking space for automobiles was built near the tennis courts at Magazine Beach. Extensive plantings of trees and shrubs were made along

Memorial Drive, and considerable grading and loaming and over 5,000 feet of new granolithic walk installed on the lower end of Cambridge Parkway.

The area between Brooks Street, North Beacon Street and the railroad in the Charles River Upper Division was filled, graded, loamed and seeded, and a considerable area was filled between Soldiers Field Road and Charles River near the Speedway. A new practice green, four shelters and a number of seats were built and installed at the Riverside Golf Course.

Considerable areas in the Blue Hills were cleared of brush and dead wood. One hundred Arbor Vitae trees were planted at Spring Street, Dedham, a large number of trees were set out along Quincy Shore Reservation and replaced along Old Colony Parkway.

At Nantasket Beach a new band stand was built, the Cafe stand enlarged, and extensive repairs made to the hotel. A concrete sidewalk was constructed from the bath house to the Cafe.

V. Police

The permanent police force has remained substantially the same during the year, the force at the end of the year consisting of one Captain and Executive Officer, 5 captains, 6 lieutenants, 18 sergeants, 159 patrolmen, 1 policewoman, 1 temporary patrolman, a total of 191.

Edward M. Woods has continued as Captain and Executive Officer. During the year 1 lieutenant died, 3 officers retired, and 5 officers were appointed. Twenty call officers and one policewoman were appointed to serve during the summer months in addition to the regular force.

During the year 3,894 cases were handled by the department before the courts. The members of the force performed 5,497 hours of extra duty without extra compensation. Eleven officers were commended by the Commission for meritorious conduct.

The morale of the force has been excellent and it has been unnecessary to prefer charges against any officer during the year.

VI. Rainfall and Consumption of Water

The rainfall and yield of the watersheds was well above the average during the year, the rainfall being about 5 inches above the average for the past 36 years. Wachusett Reservoir at the beginning of the year was at elevation 374.77, 20.23 feet below high water, and dropped to 374.66 on January 6, the lowest point during the year. The reservoir filled to elevation 394.40 on May 9, the highest stage during the year. About nine and a half billion gallons of water were diverted during the spring from the Ware River. During the latter part of the year the unusual amount of rainfall resulted in filling the reservoir to within a few feet of the high water mark.

During the year 46,845,557,000 gallons of water were furnished to the eighteen municipalities regularly supplied, equivalent to an average daily consumption of 127,993,300 gallons or 90 gallons per capita for the estimated population of 1,422,170 in the district supplied, a decrease over the previous year of nearly seven million gallons per day and nearly six gallons per capita per day.

VII. Special Investigations

In accordance with the provisions of Chapter 12 of the Resolves of 1932 the Commission investigated and reported on the advisability of developing and improving for park purposes certain property on the Old Colony Boulevard in the Dorchester District of Boston.

In accordance with the provisions of Chapter 13 of the Resolves of 1932 the Attorney General, the Commissioner of Corporations and Taxation and the Metropolitan District Commissioner investigated relative to providing for certain annual payments by the Commonwealth to certain towns on account of the construction of certain additions to the metropolitan water system.

In accordance with the provisions of Chapter 15 of the Resolves of 1932 the Commission investigated and reported on the advisability of constructing

a boulevard or parkway from Administration Road in the city of Quincy to Willard Street in the town of Braintree.

In accordance with the provisions of Chapter 16 of the Resolves of 1932 the Commission investigated and reported relative to the construction of a foot bridge over the Neponset River between the city of Boston and the town of Milton.

In accordance with the provisions of Chapter 33 of the Resolves of 1932 the Metropolitan District Commission and the Department of Public Works prepared and reported on plans and estimates relative to the establishment of a comfort station and parking place on land near the Wachusett Dam in the town of Clinton.

In accordance with the provisions of Chapter 51 of the Resolves of 1932 the Commission investigated and reported on the advisability of purchasing for park purposes certain property on the westerly bank of the Mystic River in the city of Somerville.

VIII. Other Reports

The reports of the Directors of Park Engineering, Water and Sewerage, with tables, statistics and financial statements, are hereto appended.

Respectfully submitted,

DAVIS B. KENISTON,
Metropolitan District Commissioner.

February 28, 1933.

REPORT OF THE ASSOCIATE CIVIL ENGINEER OF PARK ENGINEERING

HON. DAVIS B. KENISTON, *Commissioner, Metropolitan District
Commission.*

DEAR SIR:

The following report is submitted of the work done under the direction and supervision of the engineering department of the parks division during the year ending December 31, 1932.

ORGANIZATION

The engineering force has averaged as follows: one director of park engineering, one associate civil engineer, one superintendent of locks and drawbridges, one supervisor of machinery and equipment, one senior civil engineer, five assistant civil engineers, twelve junior civil engineers, one senior engineering draftsman, one general construction inspector, sixteen senior engineering aids, fifteen junior engineering aids, one garage foreman and chauffeur, four stenographers, one plan clerk and forty-seven lock and drawbridge assistants, mechanics, operators and helpers.

All construction work and the general direction and supervision of all maintenance and repairs of parkways and boulevards, bridges, buildings and structures in the various park divisions and the operation of the various drawbridges and locks, are in charge of the engineering department.

Of the contracts during 1931 on which work had been in progress during the year, twelve were not completed until the season of 1932, as follows:

Locker and professional buildings at Ponkapoag, completed May 18, 1932.

Traffic control signals at the Larz Anderson, Western Avenue and River Street bridges, Boston and Cambridge, completed July 16, 1932.

Shore protection, Revere Beach Reservation, completed June 6, 1932.

Grading and steps, northerly side of Bunker Hill Monument, Boston, completed May 14, 1932.

Relocation of Bold Knob Road, Stony Brook Reservation, Boston, completed May 14, 1932.

Underpass, Memorial Drive at Massachusetts Avenue, Cambridge, completed May 17, 1932.

Golf course, Redman Farm, Canton, completed May 25, 1932.

Reinforced concrete floor for Revere Beach Parkway bridge over the Boston, Revere Beach and Lynn Railroad, Revere, completed May 16, 1932.

Steel superstructure, Revere Beach Parkway bridge over the Boston, Revere Beach and Lynn Railroad, Revere, completed April 15, 1932.

Construction of Nonantum Road Extension from Hyde Brook, Newton, to Water Street, Watertown, completed June 23, 1932.

Additions to police station, Revere Beach, completed September 15, 1932.

Construction of skating shelter at Belcher Brook Pond, Blue Hills Reservation, Quincy, completed January 8, 1932.

CONSTRUCTION AND MAINTENANCE WORK

During the year plans and specifications have been prepared and construction supervised on the following work done by contract or by the maintenance forces of the various divisions:

CHARLES RIVER BASIN

Widening and extension of the Boston Embankment: Work under contract No. 173, which was let October 29, 1931, included filling and sloping to subgrade along the area in progress of development and will soon be completed. This work is being done by the Trimount Dredging Company. After the completion of the work under this contract, contracts will be let for the finished surfacing of the work along the embankment, including loam surfaces, walks, and architectural features.

Work is in progress under contract with the C. & R. Construction Company

for excavating, filling, grading, surfacing, shore protection, concrete and granite masonry and boat landings, southerly from Longfellow Bridge, Boston.

MYSTIC VALLEY PARKWAY

A contract has been let for the construction of Mystic Valley Parkway from Revere Beach Parkway to Mystic Avenue at Harvard Street, Medford. This work involves excavating the soft material and filling with good material to subgrade, and is being done by the M. McDonough Company.

MIDDLESEX FELS PARKWAY

The work of building traffic circle at the junction of South Border Road, Forest Street and Fellsway West, Medford, under contract with C. J. Maney Co., is nearly completed.

HAMMOND POND PARKWAY

The work of constructing Hammond Pond Parkway from Newton Street to Boylston Street, including traffic circle at Newton Street, Brookline and Newton, has been completed by the M. McDonough Company. The circle at Newton Street is open to traffic but the parkway road from the circle to Boylston Street is not open to traffic on account of the fact that Boylston Street is partly closed to through traffic because of reconstruction in progress along this street by the Public Works Department.

NANTASKET BEACH RESERVATION

Work under contract for the reconstruction of the Nantasket Beach Reservation roadway between Atlantic Hill and Bay Street, Hull, has been completed by the M. McDonough Co. This work involved a complete realignment of the travelled way and walks and improvement of the loamed areas and parking spaces, and removal of all overhead wires and poles from the boulevard to a new location along the railroad. The removal of the overhead wires and the poles is in progress.

NEPONSET RIVER RESERVATION

Chapter 460 of the Acts of 1931 and Chapter 170 of the Acts of 1932 authorized the widening and reconstructing of Paul's Bridge and approaches over the Neponset River at East Milton Street, Boston, and Milton Street, Milton. Contract for this work has been let to the Lee Construction Company and the work is now in progress.

RESURFACING OF PARKWAYS AND BOULEVARDS

The widening of Revere Beach Parkway from Fellsway, Medford, to Main Street, Everett, under contract with the M. McDonough Company, has been completed. The roadway was widened to conform to the new width of the bridges over the Revere Beach Parkway.

Resurfacing Fellsway West between Cherry Street and Fulton Street, and between Forest Street and Elm Street, Medford, was done by the C. & R. Construction Company.

Plans and specifications were prepared and contract let to Coleman Brothers, Inc., for reconstructing Bold Knob Road westerly, 600 feet from Gordon Avenue, and Turtle Pond Road, from Bold Knob Road to Dedham Parkway, Stony Brook Reservation, Boston. Approximately 1,000 feet of roadway were reconstructed under this contract.

The work of reconstructing Chickatawbut Road from a point about 5,300 feet easterly from Randolph Avenue to the intersection of Wampatuck Road, Quincy, was done by A. G. Tomasello & Son, Inc.

Furnace Brook Parkway from Willard Street to Bunker Hill Lane, Quincy, was resurfaced with bituminous penetration macadam, by the Coleman Brothers, Inc.

Simpson Brothers Corporation did the work of resurfacing Lynn Shore Reservation from Washington Street, Lynn, to Humphrey Street, Swampscott.

Soldiers Field Road, Charles River Reservation (Speedway Section) from Western Avenue to Telford Street, Boston, was resurfaced by the M. McDonough Company.

Alternative bids were received for the widening and resurfacing of Memorial Drive, between Brookline Street and Fowler Street, Cambridge. The contract was let to Simpson Brothers Corporation and a bituminous concrete surfacing laid on this section of the roadway. This work included widening the bridge over the Grand Junction Railroad.

The work of resurfacing Middlesex Fells Parkway, easterly roadway, from Mystic Avenue to Wellington Bridge, Somerville, was done by the C. & R. Construction Company.

The C. & R. Construction Company resurfaced Blue Hill River Road from Randolph Avenue, Quincy, to West Street, Braintree.

Contract for the construction of a traffic road from Cambridge Street about 570 feet southerly on the westerly side of Soldiers Field Road, Boston (Brighton District) was awarded to the John P. Condon Corporation. The work has not yet been completed.

BRIDGE REPAIRS

A new floor system was placed on the easterly side of the bridge over the Boston & Maine Railroad, Medford Branch, Middlesex Fells Parkway.

The steel draw of the Dorchester Bay Bridge, Old Colony Parkway, was painted.

Extensive repairs were made to the concrete slab under the westerly track of the New York, New Haven & Hartford Railroad on the Pope's Hill Bridge, Old Colony Parkway.

Repairs were made to the paving and superstructure of the Harvard Bridge, Charles River Reservation.

A new sidewalk was built on the bridge over the Boston & Maine Railroad near Revere Station, Revere Beach Parkway.

Extensive repairs were made to the culvert at Abbington Street, Revere Beach Parkway, Everett.

General repairs were made to the following drawbridges: Saugus River Bridge, Lynnway, Malden River Bridge, Revere Beach Parkway, and Wellington Bridge, Middlesex Fells Parkway.

MISCELLANEOUS

The work of dredging and grading slopes along a section of the Alewife Brook between Massachusetts Avenue and Broadway, Cambridge, Arlington and Somerville, was done by M. McDonough Co.

The work of installing pumping device for the Ponkapoag golf course, Canton, was done by the Atlantic Pump and Supply Co.

The work of ditching, sweeping, applying bituminous materials, and sanding Blue Hill River Road from Hillside Street, Milton, to West Street, Braintree, was done by E. C. Sargent.

The work of installing plumbing fixtures in the caddy house and workroom of the store house at the Ponkapoag golf course, Canton, was done by Albert E. Touchet, Inc.

The work of resurfacing the Cambridge approach to the Boylston Street and River Street Bridges with bituminous concrete, was done by the C. & R. Construction Co.

The work of furnishing and erecting two bronze tablets on the Memorial Drive Underpass at Massachusetts Avenue, was done by T. F. McGann & Sons Co.

The work of replacing two dolphins near the locks in the Charles River Basin was done by the Bay State Dredging & Contracting Co.

Dredging the Charles River near Galen Street Bridge, Watertown, and

at the junction of Maple Street and Nonantum Road, Newton, opposite Hyde Brook, was done by John P. Condon Corporation.

The work of retubing the boiler at the Charles River lock was done by the Bethlehem Shipbuilding Corporation, Ltd.

Painting the lock gates at the Charles River Dam was done by J. J. Collins.

Labor for repairs to the several bridges was furnished by C. W. Dolloff & Company.

Labor for repairs to the steel work on bridges was furnished by the Bethlehem Shipbuilding Corporation, Ltd.

Borings were made in the Mystic River between Mystic Avenue and Fells- way, Medford, by the Gow Company.

The work of widening Old Colony Parkway at its intersection with Tenean and Freeport streets, Boston, was done by the C. & R. Construction Com- pany.

Repairs were made to the damaged coping at Neponset Bridge by E. C. Sargent.

The work of setting granite edgestone on Quincy Shore Reservation, east of Atlantic Street, was done by the Alert Construction Company.

The work of repairing the damaged portions of the sea wall at Lynn Shore Reservation, has not been completed. This work is being done by Simpson Bros., Inc.

The work of repairing sea walls damaged by the storm of 1931, Winthrop Shore Reservation, was done by C. W. Dolloff & Company.

PLANS, STUDIES AND ESTIMATES

Included in the extension of Revere Beach Parkway from Fells- way, Med- ford, to Mystic Avenue, Somerville, were surveys and studies made for bridge over the Mystic River, authorized by Chapter 450 of the Acts of 1931.

Plans have been made for the construction of Hammond Pond Parkway, Boylston Street to Beacon Street, Newton, for which authorization and appropriation were made by Chapter 50 of the Acts of 1931.

Plans have been made for the construction of a parkway from North Beacon Street to the junction of Market Street and Arsenal Street, Boston, Brighton District, in accordance with Chapter 371 of the Acts of 1929.

Studies and plans for completing the work of widening and extension of the Boston Embankment between Cottage Farm Bridge and Charles River Dam are in progress.

Plans and estimates have been made relative to constructing roadway in Blue Hills Reservation from the junction of Chickatawbut Road, Quincy, to Granite Street, Braintree.

Plans and estimates have been made relative to constructing footbridge across the Neponset River between Mattapan and Milton.

Plans and estimates have been made relative to improving certain land westerly of Old Colony Boulevard and adjoining Savin Hill Beach, Dor- chester, for park purposes.

Plans and estimates have been made regarding the advisability of pur- chasing for park purposes property on the westerly bank of the Mystic River in the city of Somerville.

Plans and estimates were prepared for tide gates and weirs in the Saugus River at the junction of Boston Avenue, Lynn, and Lincoln Avenue, Saugus.

A topographical survey and plan taken from the Lawrence Estate, Med- ford, comprising over 285 acres, are being made by a party of engineers furnished by the Emergency Planning and Research Bureau, without any expense to the Commonwealth.

PLANS FOR TAKINGS AND CONVEYANCES

Plans for takings and conveyances have been made as follows:

Land to be re-transferred to the City of Woburn on Woburn Parkway near Cove Street.

Exchange of lands in Brookline for Hammond Pond Parkway westerly from Hammond Street.

Plan of abandonment of slope rights in Quincy on the westerly corner of Quincy Shore Boulevard and Sea Street.

Taking of land in Saugus for the Lynn Fells Parkway from Newburyport Turnpike to Walnut Street.

Plan of land to be transferred in Cambridge by the City of Cambridge of Massachusetts Avenue from Harvard Bridge to the northerly side of Memorial Drive.

Taking of land in Medford at the junction of South Border Road and Whitmore Brook Entrance, Middlesex Fells Reservation.

Taking of land in Canton east of Farm Street, Blue Hills Reservation.

Taking of land in Canton north of Randolph Street to Ponkapoag Pond, Blue Hills Reservation.

Taking of land in Cambridge and Somerville on Alewife Brook Parkway, southerly corner of Woodstock Street.

Taking of land in Medford for Revere Beach Parkway Extension from Middlesex Fells Parkway to Mystic Avenue at Harvard Street.

Taking of land in Boston from North Beacon Street to Western Avenue, Charles River Reservation.

Taking of land in Boston on Market Street about 500 feet south of Western Avenue, Charles River Reservation.

Plan of easement in Revere for 42'' drain on Revere Beach Parkway.

Taking of land in Medford at junction of South Border Road, Forest Street and Fellsway West for Traffic Circle, Middlesex Fells Parkway.

Taking of land in Milton near Pauls Bridge, Neponset River Parkway.

Plan of conveyance of land in Somerville and Medford on Mystic Valley Parkway south of Auburn Street to the B. & M. R. R.

Plan of easement in Newton at the B. & A. R. R. between Boylston Street and Beacon Street, Hammond Pond Parkway.

LIGHTING OF PARKWAYS AND BOULEVARDS

The lighting systems of Lynn Shore and Nahant Beach Reservations have been reconstructed and contracts for their operation made. The work of removing overhead wires from Nantasket Avenue and installing on ornamental lighting system is in progress. Lights have been installed for the Fellsway West traffic circle and for the traffic circle of Hammond Pond Parkway at the junction of Newton and Hammond Streets, Brookline.

TRAFFIC CONTROL SIGNALS

Traffic signals of the vehicle and pedestrian actuated type have been installed and are in operation on a rental basis at the following six intersections:

✓ Soldiers Field Road at the Anderson, Western Avenue and River Street Bridges.

✓ Memorial Drive at the Anderson, Western Avenue and River Street Bridges.

Contracts have been made for material and equipment to expedite and protect vehicular traffic and pedestrians crossing the Old Colony Parkway between Columbia Circle and Neponset Avenue. This work includes the installation of vehicle actuated traffic signals at the southerly intersection of Freeport Street and pedestrian and vehicle actuated signals at Redfield, Tolman and Conley Streets and the northerly intersection with Freeport Street.

PERMITS

One hundred and seventy-seven permits were issued for driveway entrances and miscellaneous purposes and fifty-six orders concerning restrictions were issued and reported upon. This division has furnished the supervision of all driveway construction work and all other work relating to permits and has reported on building operations where violations of restrictions might be involved.

ICE BREAKING IN BASIN

The work of breaking ice in the channels of the Charles River Basin below Longfellow Bridge and in Broad and Lechmere Canals for the season of 1931 and 1932 was done by William A. McReel by contract for the sum of \$4,475.

FINANCIAL

The cost of engineering salaries and expenses was as follows:						
Construction:						
Salaries	.	.	.	.	.	\$72,087.08
Expenses	.	.	.	.	.	3,124.30
						<hr/>
						\$75,211.38
Maintenance:						
Salaries	.	.	.	.	.	54,945.28
Expenses	.	.	.	.	.	2,636.55
						<hr/>
						57,581.83
						<hr/>
Total	.	.	.	.	.	\$132,793.21

Tables 1 to 9, inclusive, of statistics relative to the parks division are appended.

Respectfully submitted,

DAVID A. AMBROSE,
Associate Civil Engineer.

TABLE 1. — The following is a record of the traffic through locks and drawbridges during the year:

Charles River Dam Lock and Drawbridge

Number of openings of highway drawbridge	1,810
Number of openings of lock	3,730
Number of vessels	2,950
Number of boats	3,660
Lumber (feet B.M.)	100,000
Coal (tons)	167,420
Coke (tons)	8,264
Oil (bbls.)	607,174
Sand (tons)	222,515
Gravel (tons)	52,055
Granite (tons)	1,703
Mud (tons)	800
Dredge pipe (lengths)	576
Miscellaneous (tons)	180

Cradock Bridge Lock

Number of openings	329
Number of boats	331
Number of canoes, dories etc., over rolls	251

Neponset River Drawbridge

Number of openings	271
Number of vessels	436
Coal (tons)	36,025
Lumber (feet B. M.)	640,000

Dorchester Bay Drawbridge

Number of openings	324
Number of vessels	481
Oil (bbls.)	229,200
Piles (number)	400

Malden River Drawbridge

Number of openings	76
Number of vessels	106

Saugus River Drawbridge

Number of openings	267
Number of vessels	414

Wellington Drawbridge

Number of openings	89
Number of vessels	132

TABLE 2. — Metropolitan Park System — Areas of Reservations and Parkways — December 1, 1932.

		RESERVATIONS (ACRES).															PARKWAYS (ACRES).																							
		Beaver Brook.	Blue Hills.	Bunker Hill.	Charles River.	Hart's Hill.	Hemlock Gorge.	King's Beach and Lynn Shore.	Middlesex Fells.	Mystic River.	Nantasket Beach.	Neponset River.	Quincy Shore.	Revere Beach.	Stony Brook.	Winthrop Shore.	Total Acres.	Alewife Brook.	Blue Hills.	Dedham.	Fresh Pond.	Furnace Brook.	Hammond Pond.	Lynn Fells.	Lynnway.	Middlesex Fells.	Mystic Valley.	Nahant Beach.	Neponset River.	Old Colony.	Quannapowitt.	Revere Beach.	West Roxbury.	Winthrop.	Woburn.	Total Acres.	Grand Total Reser- vations and Park ways (Acres).			
Cities.																																								
1	Boston . . .	-	-	6.05	211.73	-	-	-	-	-	-	145.90	-	-	463.72	-	827.40	-	.27	21.98	-	-	-	-	-	-	-	28.80*	50.75	-	-	-	75.65	-	-	177.45	1,004.85	1		
2	Cambridge . .	-	-	-	223.74	-	-	-	-	-	-	-	-	-	-	-	223.74	86.21	-	-	12.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98.61	322.35	2		
3	Chelsea . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.16	21.16	3		
4	Everett, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.16	21.16	4		
5	Lynn, . . .	-	-	-	-	-	-	19.59	-	-	-	-	-	-	-	-	19.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.14	31.14	5	
6	Malden, . . .	-	-	-	-	-	-	-	59.53	-	-	-	-	-	-	-	59.53	-	-	-	-	-	-	-	-	23.58	-	-	-	-	-	-	-	-	-	-	23.58	83.11	6	
7	Medford, . . .	-	-	-	-	-	-	-	963.73	42.32	-	-	-	-	-	-	1,006.05	-	-	-	-	-	-	-	-	45.01	278.67	-	-	-	-	-	8.10	-	-	-	-	331.78	1,337.83	7
8	Melrose, . . .	-	-	-	-	-	-	-	180.19	-	-	-	-	-	-	-	180.19	-	-	-	-	-	-	14.38	-	-	-	-	-	-	-	-	-	-	-	-	-	14.38	194.57	8
9	Newton, . . .	-	-	-	187.64	-	4.24	-	-	-	-	-	-	-	-	-	191.88	-	-	-	-	117.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.17	309.05	9	
10	Quincy, . . .	-	2,562.49	-	-	-	-	-	-	-	-	-	40.75	-	-	-	2,603.24	-	-	-	101.12	-	-	-	-	-	-	-	-	2.72	-	-	-	-	-	-	103.84	2,707.08	10	
11	Revere, . . .	-	-	-	-	-	-	-	-	-	-	-	-	64.29	-	-	64.29	-	-	-	-	-	-	5.15	-	-	-	-	-	-	67.22	-	8.61	-	-	-	-	80.98	145.27	11
12	Somerville, . .	-	-	-	-	-	-	-	-	5.92	-	-	-	-	-	-	5.92	10.00	-	-	-	-	-	-	11.83	4.95	-	-	-	-	-	-	-	-	-	-	26.78	32.70	12	
13	Waltham, . . .	42.77	-	-	38.65	-	-	-	-	-	-	-	-	-	-	-	81.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81.42	13	
14	Woburn, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.63	22.63	22.63	22.63	14		
Towns.																																								
15	Arlington, . .	-	-	-	-	-	-	-	-	7.83	-	-	-	-	-	-	7.83	28.10	-	-	-	-	-	-	-	-	17.40	-	-	-	-	-	-	-	-	-	45.50	53.33	15	
16	Belmont, . . .	15.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.56	20.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.43	35.99	16	
17	Braintree, . .	-	67.84	-	-	-	-	-	-	-	-	-	-	-	-	-	67.84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67.84	17	
18	Brookline, . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.55	80.55	18
19	Canton, . . .	-	521.01	-	-	-	-	-	-	-	-	264.26	-	-	-	-	785.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	785.27	19	
20	Dedham, . . .	-	-	-	6.51	-	-	-	-	-	-	234.54	-	-	-	-	241.05	-	-	15.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.16	256.21	20	
21	Dover, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	
22	Hingham, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	
23	Hull, . . .	-	-	-	-	-	-	-	-	-	25.59	-	-	-	-	-	25.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.59	23
24	Milton, . . .	-	1,551.40	-	-	-	-	-	-	-	-	269.09	-	-	-	-	1,820.49	-	83.31	-	-	-	-	-	-	-	-	51.44	-	-	-	-	-	-	-	-	134.75	1,955.24	24	
25	Nahant, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.22	-	-	-	-	-	-	-	-	66.22	66.22	25		
26	Needham (Randolph) . .	-	257.01	-	-	-	14.24	-	-	-	-	-	-	-	-	-	14.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.24	26
27	Saugus, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257.01	-	-	-	-	-	-	25.14	-	-	-	-	-	-	-	-	-	-	-	-	-	25.14	25.14	27
28	Stoneham, . .	-	-	-	-	-	-	-	705.33	-	-	-	-	-	-	-	705.33	-	-	-	-	-	-	.15	-	-	-	-	-	-	-	-	-	-	-	-	.15	-	705.48	28
29	Swampscott . .	-	-	-	-	-	-	3.10	-	-	-	-	-	-	-	-	3.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.10	29
30	Wakefield, . .	-	-	-	-	22.97	-	-	-	-	-	-	-	-	-	-	22.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.54	-	38.51	30
31	Watertown, . .	-	-	-	80.95	-	-	-	-	-	-	-	-	-	-	-	80.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.95	31
32	Wellesley, . .	-	-	-	66.07	-	4.58	-	-	-	-	-	-	-	-	-	70.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70.65	32
33	Weston, . . .	-	-	-	139.82	-	-	-	-	-	-	-	-	-	-	-	139.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	139.82	33
34	Westwood, . .	-	-	-	-	-	-	-	-	-	-	6.57	-	-	-	-	6.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.57	34
35	Weymouth, . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	
36	Winchester, . .	-	-	-	-	-	-	-	261.93	-	-	-	-	-	-	-	261.93	-	-	-	-	-	-	-	-	-	48.28	-	-	-	-	-	-	-	.60	48.88	-	310.81	36	
37	Winthrop, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.83	16.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.13	-	-	.13	-	16.96	37	
		58.33	4,959.75	6.05	955.11	22.97	23.06	22.69	2,170.71	56.07	25.59	920.36	40.75	64.29	463.72	16.83	9,806.28	144.74	83.58	37.14	12.40	101.12	184.06	39.67	5.15	80.42	349.30	66.54	80.24	53.47	15.54	127.62	89.31	8.74	23.23	1,502.27	11,308.55			

*Includes East Main St. from Wolcott Square to Paul's Bridge.

TABLE 3. — Metropolitan Park System — Mileage of Roadways — December 1, 1932.

		Alewife Brook Parkway	Blue Hills Parkway		Blue Hills Res.	Charles River Res.		Dedham Parkway	East Milton Street		Fresh Pond Parkway	Furnace Brook Parkway	Hammond Pond Parkway	Lynn Fells Parkway	Lynn Shore Res.	Lynnway	Memorial Drive		Middlesex Fells Parkway		Middlesex Fells Res.		MysticValleyParkway	Nahant Beach Park- way	Nantasket Beach Res.	Neponset River Parkway	Old Colony Boulevard	Quannapowitt Parkway	Quincy Shore Res.	Revere Beach Parkway		Revere Beach Res.		
			Main	Second		Main	Second		Main	Second							Main	Second	Main	Second	Main	Second								Main	Second			Main
	<i>Cities.</i>																																	
1	Boston . . .	-	.02			4.30	.21	.49	.48	.19	-																							
2	Cambridge . .	1.31									.52						4.03	.43																
3	Chelsea . . .																																	
4	Everett . . .																																	
5	Lynn														1.04	.12																		
6	Malden . . .																		1.87	1.12	.72													
7	Medford . . .																		2.80	2.61	3.94	.40	3.19											
8	Melrose . . .													1.90							1.04													
9	Newton . . .					2.67							.89																					
10	Quincy				4.55							3.37																						
11	Revere . . . .															.57													2.44				
12	Somerville . .	.93																	.48	.54		.38							2.19	1.13	2.70			
13	Waltham . . .																																	
14	Woburn . . .																																	
	<i>Towns</i>																																	
15	Arlington . .																																	
16	Belmont . . .																																	
17	Braintree . .				.33																													
18	Brookline . .																																	
19	Canton																																	
20	Dedham . . . .							.49																									
21	Dover																																	
22	Hingham . . .																																	
23	Hull																																	
24	Milton	2.82	1.46		5.26																				.71									
25	Nahant																						1.94											
26	Needham . . .																																	
27	Saugus													1.71																				
28	Stoneham . . .													.02								6.67											
29	Swampscott . .														.08																			
30	Wakefield . .																										.68							

TABLE
drawbridg

✓
Number c
Number c
Number c
Number c
Lumber (c
Coal (ton
Coke (ton
Oil (bbls.
Sand (ton
Gravel (t
Granite (c
Mud (ton
Dredge p
Miscellan

Number c
Number c
Number c

✓
Number c
Number c
Coal (ton
Lumber (c

✓
Number c
Number c
Oil (bbls.
Piles (nu

Number c
Number c

Number c
Number c

Number c
Number c

TABLE 4. — *Lengths of Roads and Bridle Paths in Reservations not open to Motor Vehicles*

	Miles
Blue Hills Reservation	42.08
Middlesex Fells Reservation	15.30
Stony Brook Reservation	1.60
Beaver Brook Reservation . . . . .	.22
Charles River Reservation . . . . .	.89
	<hr/>
	60.09

TABLE 5 — *Electric Street Lights on Parkways and Reservations*

	Lights	
Alewife Brook Parkway (26-600 c.p., 1-1500 c.p.)	27	
Blue Hills Parkway (600 c.p.)	59	1
Blue Hills Reservation, Hillside Street (80 c.p.)	14	
Charles River Dam, Reservation (1500 c.p.)	12	
Charles River Dam, Roadway (1000 c.p.)	20	
Charles River Reservation, Embankment (87-100 c.p., 17-600 c.p.)	104	
Charles River Reservation, No. Beacon Street Bridge (4-1500 c.p., 9-1000 c.p.)	13	
Charles River Reservation, Soldiers Field Road (51-1000 c.p., 47-1500 c.p.)	98	
Dorchester Bay Bridge (1500 c.p.)	8	
Fresh Pond Parkway (100 c.p.)	15	
Furnace Brook Parkway (600 c.p.)	58	2
Harvard Bridge (600 c.p.)	24	
Larz Anderson Bridge (100 c.p.)	24	
Lynn Fells Parkway (600 c.p.)	28	3
Lynn Shore Reservation (4-1000 c.p., 44-600 c.p.)	48	4
Lynnway (1-1000 c.p., 10-600 c.p.)	11	
Memorial Drive (32-600 c.p., 181-250 c.p.)	213	
Middlesex Fells Parkway (7-1500 c.p., 263-600 c.p.)	270	5
Middlesex Fells Reservation (2-80 c.p., 35-250 c.p., 21-600 c.p.) .	58	6
Mystic Valley Parkway (1-250 c.p., 89-600 c.p.)	90	7
Nahant Beach Parkway (600 c.p.)	16	8
Nantasket Beach Reservation (40-100 c.p., 12-600 c.p.)	52	9
Neponset Bridge (600 c.p.)	16	
Neponset River Parkway (600 c.p.)	18	
Old Colony Parkway (49-1500 c.p., 2-1000 c.p.)	51	
Quincy Shore Boulevard (600 c.p.)	57	10
Revere Beach Parkway (600 c.p.)	181	11
Revere Beach Reservation (2-60 c.p., 1-40 c.p., 1-250 c.p., 107-1500 c.p.)	111	12
River Street Bridge (250 c.p.)	8	
Saugus River Bridge (100 c.p.)	7	
Weeks Bridge (100 c.p.)	24	
Western Avenue Bridge (250 c.p.)	8	
West Roxbury Parkway (600 c.p.)	27	13

¹All night, April 1 to November 30.
²Nineteen all night, except November 1 to March 31, until 1 A.M. Fourteen all night, April 1 to October 31.
³Seventeen all year until 1 A.M.
⁴Three 600 c.p., June 1 to December 1.
⁵Fifty-two 600 c.p., March 15 to November 31. Four 600 c.p. all year until 1 A.M.
⁶Two 80 c.p. and twenty-two 600 c.p., all year until 1 A.M.
⁷Ten 600 c.p. all night, except November 1 to March 31, until 1 A.M. Thirty-two 600 c.p. all year until 1 A.M.
⁸Four, June 1 to December 1.
⁹Twelve 600 c.p. and eleven 100 c.p. in summer only.
¹⁰Forty all night, except November 1 to March 31 to 1 A.M. Eleven all night, April 1 to October 31. Six all year until 1 A.M.
¹¹Seventy-seven all night, April 1 to October 31.
¹²Thirty-three 1500 c.p. all night, May 1 to October 31. Thirty-two 1500 c.p. to midnight June 1 to September 30. One 60 c.p. all night, May 1 to September 30.
¹³All night, except November 1 to March 31, until 1 A.M.

14	P.D. 48
Winthrop Parkway (14-250 c.p., 7-600 c.p.)	21
Winthrop Shore Reservation (600 c.p.)	23
Woburn Parkway (600 c.p.)	4 ¹⁴
	<hr/> 1,818

TABLE 6
Miles of Seashore

	<i>Miles</i>
Lynn Shore	1.50
Nahant Beach	2.93
Revere Beach	2.74
Winthrop Shore	1.71
Nantasket Beach	1.02
Quincy Shore	2.19
Total	<hr/> 12.09

Lengths of Sea Walls

	<i>Miles</i>
Lynn Shore	1.30
Revere Beach at Northern Circle	.08
Revere Beach at Eliot Circle	.15
Revere Beach, shore protection, bath house shelter to Revere Street shelter	.29
Winthrop Shore, bridge to Great Head	1.04
Winthrop Shore, bridge to Grover's Cliff	.23
Revere Beach, shore protection, south of Northern Circle	.28
Quincy Shore Reservation, shore protection south of Webster Street	1.08
Quincy Shore Reservation, southerly end	.15
Nantasket Beach Reservation	.54
Winthrop Parkway, Revere and Winthrop, Broad Sound Avenue, to Sewall Avenue	.52
Total	<hr/> 5.66

Miles of River Bank

	<i>Miles</i>
Charles River	33.97
Mystic River	8.41
Neponset River	15.86
Alewife Brook	4.50
Total	<hr/> 62.74

TABLE 7
Bridges

Reinforced concrete bridges	23
Steel bridges	15
Wooden bridges	7 ¹
Drawbridges	6
Footbridges	12
Total	<hr/> 63

Culverts

Reinforced concrete and other masonry culverts	49
--	----

¹⁴Until 1 A.M.
¹One half of Wellington Bridge rebuilt with concrete girders.

TABLE 8
Dams

Beaver Brook Reservation, small wooden dams.	2
Blue Hills Reservation, small wooden dam	1
Charles River Reservation, wooden dam at Watertown, 220 feet in length	1
Charles River Reservation, Charles River Basin, tidal dam, 1,200 feet in length	1
Charles River Reservation, small stone dam in branch below Washington Street, Newton Lower Falls	1
Charles River Reservation, reinforced concrete dam at Washington Street, Newton Lower Falls, 140 feet in length	1
Furnace Brook Parkway, reinforced concrete dam, up-stream from Black's Creek Bridge	1
Hemlock Gorge Reservation, small stone masonry dam with stop planks, in gorge	1
Hemlock Gorge Reservation, small reinforced concrete dam on east branch of river, Newton Upper Falls	1
Hemlock Gorge Reservation, reinforced concrete dam in Charles River at Boylston Street, Newton Upper Falls, 90 feet in length	1
Mystic River Reservation, reinforced concrete tidal dam at Cradock Bridge, 100 feet in length; weirs 400 feet in length	1
Total	12

Lock Gates, Sluice Gates and Tide Gates

- Charles River Reservation, Charles River Basin Tidal Dam, 6 lock gates, 13 sluice gates, 43 tide gates.
- Mystic River Reservation, Cradock Bridge Tidal Dam, 2 lock gates, 4 sluice gates, 8 tide gates.
- Quincy Shore Reservation, 8 tide gates.

TABLE 9
Police Signal System

	<i>Miles</i>
Blue Hills Division	31½
Middlesex Fells Division	27
Nantasket Beach Division	2½
Charles River Reservation	10
Fresh Pond Parkway	½
Total	71½

Revere Beach Division police signal system, serving 11 miles of parkways and reservations, and Middlesex Fells Division, serving 1½ miles of parkway, on wires leased from the New England Telephone and Telegraph Company.

REPORT OF DIRECTOR AND CHIEF ENGINEER
OF WATER DIVISION

DAVIS B. KENISTON, *Commissioner, Metropolitan District Commission.*

SIR: I respectfully submit the following report of the construction and maintenance operations of the Water Division for the calendar year 1932.

Organization

At the beginning of the year there were 58 permanent employees in the main and branch offices, and 305 permanent employees engaged in maintaining and operating the reservoirs, aqueducts, pipe lines, hydroelectric and pumping stations and in doing miscellaneous construction work. Including the temporary force employed during the summer the maximum

number of employees of all classes at any time during the year was 414. There are now 57 permanent employees in the main and branch offices and 312 permanent employees engaged in the maintenance and operation of the works.

Metropolitan Water District and Works

The Water District now includes 20 municipalities with an area of about 174 square miles and a population as of July 1, 1932 of 1,541,940. The Water Works lands include an area of about 19,000 acres, of which about 2,000 acres have been planted with pine trees.

The works under the control of the Water Division include 9 storage reservoirs with 200 square miles of tributary watershed, a total storage capacity of 80 billion gallons and water surface of 8,600 acres; 60 miles of aqueducts; 2 hydroelectric power stations of a capacity of 7,000 horse-power; 16 miles of high-tension power transmission line; 5 distribution pumping stations with a combined equipment of 6,100 horse-power and pumping capacity of 282 million gallons a day; 12 distribution reservoirs with a capacity of 2.5 billion gallons, and 165.25 miles of distribution mains. The consumption of water from the Metropolitan Water Works during the year by the 18 municipalities regularly supplied was 46,845,557,000 gallons, equivalent to an average daily consumption of 127,993,300 gallons or 90.0 gallons per capita for a population of 1,422,170 in the district supplied.

Construction

WESTON AQUEDUCT SUPPLY MAINS

The permanent resurfacing of Galen and Maple streets, where pipe laying work under Contract No. 83 was completed so late in 1931 that this work could not be done under favorable conditions, was begun in April and was completed May 12. The total value of the work done under Contract No. 83 in 1931 and 1932 was \$138,031.30. March 29 Contract No. 86 was made with Coleman Brothers, Inc., for laying 9,200 linear feet of 60-inch steel pipe remaining to complete the No. 4 Weston aqueduct supply main. This work was completed November 4, 1932. The total value of the work done under the contract is \$138,538.19. Settlements amounting to \$6,694.90 have been made for 38,680 square feet of land acquired in fee for No. 4 main between North Beacon Street and Hillside Avenue in Boston.

NORTHERN HIGH SERVICE PIPE LINES

Surveys have been made and plans are nearly completed for the proposed 20-inch pipe line, about 21,500 feet in length, which will extend from the existing northern high service pipe line in Ocean Avenue near Revere Street in Revere to Broad and Washington streets in Lynn, to reinforce the existing pipe line which supplies the towns of Swampscott and Nahant.

ADDITIONAL PUMPING EQUIPMENT FOR CHESTNUT HILL STATION No. 1

Contract No. 84 for two steam turbine driven centrifugal pumping units, one of 1,400 horse-power and pumping capacity of 50 million gallons a day and the other of 620 horse-power and pumping capacity of 15 million gallons a day, was made with the Warren Steam Pump Company, Inc., January 20. The steam turbines were made at the West Philadelphia shops of the Westinghouse Electric & Manufacturing Company in Pennsylvania, and the official shop tests of both turbines were made September 14. The centrifugal pumps were made at the Contractor's shops in Warren, Mass., and the official shop test of the small pump was made July 31, and of the large pump October 2. At the close of the year the small unit was erected on the foundation in the pumping station and the large unit was delivered at the station ready for erection as soon as the foundation and the suction and discharge piping are completed. In connection with the installation of the new pumping units a new vertical fire tube boiler 98 inches in diameter, constructed

P.D. 48

17

under Contract No. 53-M, was erected in Station No. 1 under Contract No. 54-M and was covered with non-heat-conducting covering under Contract No. 57-M.

METERS AND CONNECTIONS

In June a 12-inch by 14-inch Venturi meter connection was installed between the No. 4 Weston Aqueduct supply main and the city of Newton and the town of Watertown distribution pipes in Center and Galen streets at the Newton and Watertown boundary line. Two Venturi meters had been purchased for installation on the force main at Chestnut Hill Pumping Station No. 1 but had not been installed at the close of the year. The total expenditure for Meters and Connections during 1932 is \$10,000.19.

PURCHASE OF SPECIAL CASTINGS

Contract No. 89 for furnishing 112 tons of special water pipes and castings was made with the Warren Pipe Company of Massachusetts, Inc., May 24. The total value of the work done under this contract is \$10,572.70.

Maintenance

PRECIPITATION AND YIELD OF WATERSHEDS

For the Wachusett watershed the total precipitation of 49.93 inches is 4.95 inches above the average for the past 36 years that records have been kept, and includes unusual rainfalls of 5.76 inches in 19 hours on September 16, 5.54 inches in 75 hours October 17 to 20, and 3.46 inches in 88 hours November 6 to 10. For the Sudbury watershed the total precipitation of 51.12 inches is 6.76 inches above the average for the past 58 years. At Cordaville in the Sudbury watershed there was a rainfall of 8.17 inches on September 16, and the total rainfall for the storms of September 16, October 17 to 20 and November 6 to 10 amounted to 16.93 inches. For the Cochituate watershed the total precipitation of 51.63 inches is 6.78 inches above the average for the past 70 years.

The average daily yield per square mile from the watersheds was for the Wachusett watershed 1,169,000 gallons; for the Sudbury watershed 1,071,000 gallons and for the Cochituate watershed 1,007,000 gallons.

STORAGE RESERVOIRS

The capacities of the storage reservoirs of the Metropolitan Water Works, the elevation of the water surfaces and the quantity of water stored in each reservoir at the beginning and at the end of the year are shown by the following table:

STORAGE RESERVOIRS	Eleva- tion ¹ of High Water to top of flash boards	Total Capacity (Gallons)	JAN 1, 1932		JAN. 1, 1933	
			Eleva- tion ¹ of Water Sur- face	Available Storage (Gallons)	Eleva- tion ¹ of Water Sur- face	Available Storage (Gallons)
Cochituate Watershed: —						
Lake Cochituate ²	144.36	2,097,100,000	140.85	1,187,500,000	143.45	1,784,800,000
Sudbury Watershed: —						
Sudbury Reservoir	260.00	7,253,500,000	258.15	5,229,500,000	256.92	4,727,200,000
Framingham Reservoir No. 1	169.32	289,900,000	167.67	124,800,000	168.11	143,800,000
Framingham Reservoir No. 2	177.12	529,900,000	175.93	428,800,000	176.17	439,000,000
Framingham Reservoir No. 3	186.74	1,180,000,000	184.97	876,600,000	184.80	863,100,000
Ashland Reservoir	225.21	1,416,400,000	225.30	1,005,300,000	224.92	984,400,000
Hopkinton Reservoir	305.00	1,520,900,000	297.66	632,800,000	304.52	1,039,800,000
Whitehall Reservoir	337.91	1,256,900,000	336.40	658,700,000	337.09	790,600,000
Wachusett Watershed: —						
Wachusett Reservoir	396.50	67,000,000,000	374.77	29,923,000,000	393.39	51,812,600,000
Totals	—	82,544,600,000	—	40,067,000,000	—	62,585,300,000

¹Elevation in feet above Boston City Base.
²Excluding Dudley Pond which was abandoned April 3, 1916.

The total storage capacity shown in the third column of the table is to the bottom of the reservoirs. The available storage shown in columns 5 and 7 is the quantity that can be conveniently used for consumption.

Wachusett Reservoir

On January 1, 1932 the water in Wachusett Reservoir was 20.23 feet below high-water line. By January 6 the water had been drawn down 0.11 of a foot, to elevation 374.66, the lowest stage reached during the year. The quantity of water then stored in the reservoir was 40,815,900,000 gallons or about 63 per cent of its total capacity. Water in the reservoir reached elevation 394.40, the highest stage during the year, on May 9 when there was 64,161,200,000 gallons of water stored in the reservoir, or 98.76 per cent of its total capacity. From May 9 to October 18, the water in the reservoir was drawn down to elevation 383.93, but with the abundant fall yield the water rose again and was 1.61 feet below high-water line at the close of the year.

During the past year the city of Worcester did not divert all of the yield of the 9.35 square miles of watershed formerly tributary to the Wachusett Reservoir, and in April, May, November and December allowed 431,000,000 gallons of water to flow into the Wachusett Reservoir but payment to the City for water not diverted has not been required, under the agreement of November 2, 1914, since early in 1931 when an additional source of water supply of more than 25 square miles was obtained for the Metropolitan Water District. No water was pumped from the Wachusett Reservoir or Quinapoxet Pond by the city during the year.

During the year 9,597,900,000 gallons of water was diverted from the Ware River at Coldbrook to the Wachusett Reservoir; the town of Clinton pumped no water from the Wachusett Reservoir under the provisions of Acts of 1923 chapter 348; and 639,500,000 gallons of water was discharged from the reservoir into the Nashua River to comply with the provisions of General Laws, chapter 92, section 14.

The Water Works lands and structures received the usual attention.

Upon removing the granolithic walk, which was constructed on the sheet lead water stop over the roof of the gate chamber at the Wachusett Dam in 1906, to determine the cause of the leakage into the gate chamber, it was found that the sheet lead had disintegrated in many places due to the action of the alkali in the concrete. On October 28 Contract No. 58-M was made with the Clinton Concrete Company to waterproof the roof with 5 plies of pitch and tar felt and lay thereon a reinforced granolithic walk. This work covered an area of 280 square yards and cost \$1,501.74.

Sudbury Reservoir

At the beginning of the year the water in Sudbury Reservoir was 0.85 of a foot below the crest of the overflow at the dam. From January 1 to March 31, when the flash-boards were put on the overflow, the water in the reservoir varied from 0.22 of a foot to 3.65 feet below the crest and averaged about 1.75 feet below. From March 31 to November 26, while the flash-boards were on the overflow, the water rose to as high as 1.48 feet above the crest, on September 17, and went down as low as 2.71 feet below the crest on November 6. At the end of the year the water in the reservoir was about 2 feet below the crest of the overflow. During the sudden yield from the storm of September 16, 56 million gallons of water overflowed from Sudbury Reservoir into Framingham Reservoir No. 3, and with this exception all water drawn from the Sudbury Reservoir was used for generating electric energy.

The land and structures at the Sudbury Reservoir were cared for in the usual manner.

Framingham Reservoir No. 3

During the entire year flash-boards were kept on the overflow of the dam

at Framingham Reservoir No. 3 and all water supplied through the Sudbury Aqueduct to the Metropolitan Water District and to the town of Framingham was drawn from this reservoir, which was replenished from time to time with water from Sudbury Reservoir. Water was wasted into Framingham Reservoir No. 1 from April 20 to 23, September 16 to 18, November 10 to 15, and from December 27 to 31. The waste in April, September and November was due to sudden yields from the watershed and the water was wasted in December so that it could be replaced with water of better quality from the Wachusett and Sudbury reservoirs. The total quantity of water wasted from the reservoir was 955,400,000 gallons.

Ashland, Hopkinton and Whitehall Reservoirs

No water was drawn from Ashland Reservoir during the year. The reservoir was kept full of water and the yield was allowed to waste over the spillway.

Water was drawn from Hopkinton Reservoir into Sudbury Reservoir from January 8 to April 12 and from May 20 to August 17. On the latter date the lowest stage, 9.4 feet below high-water line, was reached. The total quantity of water drawn was 2,230,380,000 gallons.

Water was drawn from Whitehall Reservoir into Hopkinton Reservoir from January 18 to August 9, and a small flow was maintained through the pipe line to prevent freezing from January 1 to 17 and from November 28 to the end of the year. The lowest stage, 3.1 feet below high-water line, was reached on August 18.

Framingham Reservoirs Nos. 1 and 2 and Farm Pond

No water was drawn for the supply of the Water District during the year from Farm Pond, which has been abandoned as a source of water supply for the District, or from Framingham reservoirs Nos. 1 and 2 which are now seldom used for water supply. A daily flow of 1.5 million gallons has been wasted into Sudbury River below Dam No. 1 from Framingham Reservoir No. 1, as required by the Acts of 1872, chapter 177.

The portion of Fountain Street crossing Framingham Reservoir No. 2, which is under the care of the Water Division, was repaired and resurfaced by the town of Framingham and the Water Division paid for the oil and for applying it to the roadway.

The town of Framingham pumped 204,561,000 gallons of water from its filter-galleries on the shores of Farm Pond during the periods from January 1 to June 6, June 16 to September 23 and September 26 to December 31.

Under legislative authority the Boston & Albany Railroad took approximately 18,800,000 gallons of water and the New York, New Haven & Hartford Railroad took approximately 16,000,000 gallons of water directly from Farm Pond for use in locomotives, and 11,900,000 gallons of water was wasted from the pond into the Sudbury River.

Lake Cochituate

No water was drawn from Lake Cochituate for the supply of the Metropolitan Water District during the year but 5,584,800,000 gallons was wasted at the outlet to maintain the water at the desired elevation in the lake. The lowest stage during the year was on January 1 when the water was 3.5 feet below high-water line.

In connection with the widening and rebuilding of the Worcester Turnpike at the bridge crossing the lake, considerable filling was carried out into the water to provide for widening of the old bridge.

AQUEDUCTS

The *Wachusett Aqueduct* was used on 245 days during the year, the total time in service amounting to 99 days, 4 hours and 57 minutes, and the quantity of water discharged from the Wachusett Reservoir into the aqueduct was 33,725,500,000 gallons, equivalent to an average draft of 92,146,000

gallons per day for the entire year, and all of the water was used to generate electric energy at the Wachusett power station before it was discharged into the aqueduct.

During the year the Westborough State Hospital pumped 67,286,000 gallons of water from the aqueduct terminal chamber in Marlborough, equivalent to an average use of 184,000 gallons per day.

During the year the aqueduct terminal chamber has been repaired and painted and in the fall, while the aqueduct was out of service for several weeks, the upper portion of the open channel was cleaned for a distance of 4,670 feet and repaired where necessary.

The *Weston Aqueduct* was used every day during the year, the total time in service being 315 days, 13 hours and 20 minutes, and the total quantity of water conveyed from the Sudbury Reservoir to the Weston Reservoir was 36,223,100,000 gallons, equivalent to an average daily flow of 98,970,000 gallons and 17,500,000 gallons was wasted from the aqueduct on December 7. All of this water was used for generating electric energy at the Sudbury power station.

On December 7 James Mawhinney, a laborer who had been employed on the Works for 15 years and a part of whose duties was to patrol about 4 miles of the aqueduct line in Framingham and care for the fires at gaging chambers Nos 1 and 2, did not return home at the usual time and upon investigation the cover of one of the manholes was found unlocked and left open, although his duties did not require that the cover should be opened. The water was therefore drawn out of the aqueduct and a searching party found his body about 3 A.M. on December 8 near gaging chamber No. 2, about $2\frac{1}{4}$ miles below the open manhole.

The *Sudbury Aqueduct* was in continuous use during the year with the exception of 31 hours on October 25 and 26, and of $23\frac{1}{4}$ hours on November 3 and 4, when the interior of the aqueduct was inspected and two sections where organic growths were found were cleaned. The aqueduct was supplied with 9,244,800,000 gallons of water from Framingham Reservoir No. 3, of which the town of Framingham pumped 277,081,000 gallons for its supply and the remaining 8,967,700,000 gallons, equivalent to an average of 24,501,913 gallons a day, was delivered to Chestnut Hill Reservoir for consumption in the Metropolitan Water District.

The State Department of Public Works constructed reinforced concrete mats over this aqueduct to protect it from injury for the entire width of the new State highways at Reservoir Street in Needham and Boylston Street in Newton.

The *Cochituate Aqueduct* was not in use during the year. The State Department of Public Works strengthened this aqueduct at two places with reinforced concrete to protect it from injury where the new State highway crosses. This work extended for a distance of 90 feet near Dedman's waste-weir and for a distance of 525 feet near Wellesley Hills Square where the highway follows the line of the aqueduct for quite a distance.

The city of Newton laid a sewer under the aqueduct at Alban Road, Waban, 18 feet below the surface of the ground. This was accomplished without danger of undermining the aqueduct by driving steel cylinders under the aqueduct and laying the 15-inch cast-iron pipe therein for the sewer, filling the space between it and the casing with concrete.

All of the aqueduct lands and structures have been cared for in the usual manner.

PROTECTION OF THE WATER SUPPLY

To prevent pollution of the water supply a Sanitary Engineer and two aids and six watchmen have been employed throughout the year to inspect ice cutting and other operations and the condition of premises on the watersheds and to enforce the sanitary rules and regulations.

Water Division forces have operated the filter-beds on Beaman Street in West Boylston, where the sewage from the Worcester County Training School, which is occupied by about 32 persons, was purified throughout the

year. The Gates Terrace filter-beds at Sterling Junction were operated continuously from April 2 to October 29 to purify the sewage from summer cottages in that vicinity. Sewage from the Eagleville Mill and the Mount Pleasant House in Holden, from the Fay School and Deerfoot Farm sausage factory and dairy at Southborough was purified by privately owned and operated filter plants.

Surface water from thickly settled drainage areas of 525 acres in the village of Sterling, from 1,280 acres along the brook near Maple Street in Marlborough, from 700 acres along Pegan Brook and an intercepting ditch in Natick was purified by filters operated by Water Division forces before it flowed into the water supply, with the exception of an overflow of 5,320,000 gallons from the brook near Maple Street in Marlborough, which was sterilized with chlorine before it entered Sudbury Reservoir and of 13,397,000 gallons from Pegan Brook and 63,759,000 gallons from the intercepting ditch in Natick, which was sterilized with chlorine before it entered Lake Cochituate.

At the Pegan Brook filters the pumping station was operated on 263 days and 263,547,000 gallons of water was pumped to the filters, an average of 720,074 gallons a day for the entire year. The cost of operating the station and caring for the grounds and filter-beds was \$5,976.14 for labor, \$478.89 for fuel and \$80.11 for supplies and repairs, a total of \$6,535.14 which is \$24.80 per million gallons filtered. The fuel cost per million foot gallons was \$0.16.

The cost of protecting the water supply by filtration was \$1,612.00 for the Wachusett, \$6,678.32 for the Sudbury and \$6,535.14 for the Cochituate watershed.

During the year 34,538 pounds of copper sulphate was dissolved in a number of storage and distribution reservoirs as an algaecide to destroy microscopical organisms, principally Uroglenopsis, Synura and Dinobryon which occurred in sufficient numbers to give the water an unpleasant taste and odor. The copper sulphate was applied as follows: Late in March 4,700 pounds was dissolved in 1,800 million gallons of water in Spot Pond to destroy growths of Uroglenopsis, Synura and Dinobryon; early in April 600 pounds was dissolved in 162 million gallons of water in the Lawrence Basin of the Chestnut Hill Reservoir to destroy a growth of Uroglenopsis; early in June 1,075 pounds was dissolved in the Marlborough arm of Sudbury Reservoir to destroy a growth of Uroglenopsis; early in July 2,950 pounds was dissolved in 1,088 million gallons of water in Framingham Reservoir No. 3 to destroy growths of Uroglenopsis, Synura and Dinobryon; early in August 550 pounds was dissolved in 150 million gallons of water in the Lawrence Basin of the Chestnut Hill Reservoir to destroy a second growth of Uroglenopsis in that basin; August 18 to 20, inclusive, 528 pounds was dissolved in the water flowing from the Sudbury Reservoir into the Weston Aqueduct, and on August 19, 575 pounds was dissolved in 200 million gallons of water in the Weston Reservoir at the outlet of the Weston Aqueduct to destroy growths of Uroglenopsis, Synura and Dinobryon; late in August 18,835 pounds was dissolved in 7,800 million gallons of water in Sudbury Reservoir to destroy growths of Uroglenopsis, Synura and Dinobryon; early in November 4,725 pounds was dissolved in 1,760 million gallons of water in Spot Pond to destroy a second growth of Uroglenopsis and Synura. The cost of the copper sulphate used as an algaecide during the year was \$1,300.

The ammonia-chlorine process was used at the Spot Pond Pumping Station early in the year in an endeavor to remove objectionable tastes and odors while the pond was covered with ice and copper sulphate could not be used for the purpose, but results were not satisfactory. This process has, however, been used with satisfactory results at the inlet to the Sudbury Aqueduct at Dam No. 1 to insure proper sterilization of the water 16 miles below at the outlet of the aqueduct at the Chestnut Hill Reservoir. The total amount of anhydrous ammonia used for this purpose was 4,266 pounds and cost \$585.30.

All water drawn for consumption during the year was sterilized with

chlorine as follows: The water diverted to the Sudbury Reservoir from Hopkinton Reservoir at the Cordaville pumping station; water drawn from Framingham Reservoir No. 3 at the entrance to the Sudbury Aqueduct at Dam No. 1, and water drawn from Weston Reservoir at the screen chamber as it flowed from the reservoir. The total amount of chlorine used was as follows: Sudbury Section 63,960 pounds, Distribution Section 155,723 pounds, total 219,683 pounds. The total expenditure for chlorine used in sterilizing the water supply during the year was \$9,025.85.

Improved brook channels, ditches, culverts and watering places were maintained in the usual manner. The cost of maintaining 35 miles of drainage ditches on all the watersheds was \$5,470.00.

For the protection of the water supply, property was acquired in the Wachusett Section in West Boylston from Holdoff A. Olson, et als, 3.99 acres; in Sterling from Willie R. Mitchell, et als, 0.33 of an acre, and in Holden from Heirs of Franz Baldauf, 1.66 acres of land with buildings thereon. The 1½ story frame dwelling with outbuildings on the Baldauf property were razed; also the 1½ story wooden frame dwelling with barns and outbuildings at the Sophia P. Waite place at Dawsonville, Holden, and at the Mary J. Holmes place in Sterling Junction.

CLINTON SEWAGE DISPOSAL WORKS

The works constructed under the provisions of Acts of 1898, chapter 557, for disposing of the sewage of the town of Clinton, were operated during the entire year. The quantity of sewage pumped and disposed of averaged 1,459,000 gallons per day. The cost of operating the pumping station was \$3,177.16, which is \$5.95 per million gallons, equivalent to \$0.12 per million foot gallons. The cost of operating the filters and intercepting sewer was \$10,306.35, which is \$19.31 per million gallons of sewage disposed of by sedimentation, filtration and irrigation.

FORESTRY

New plantings made during the year include 101,000 white pine transplants in the Wachusett Section; 250 white pine, 7,800 red pine, 4,300 spruce and 85,450 arbor vitae transplants in the Sudbury Section; and 17,000 red pine, 10,340 Scotch pine and 2,000 spruce in the Distribution Section.

In the Wachusett Section brush, grass and weeds were mowed and burned on 47 miles of marginal fire guards and forest roads 15 to 45 feet wide at a cost of \$30 per mile. The work of mowing brush, sprouts and weeds along the 40-foot fire guards in the Sudbury Section cost \$1,775.68.

The total expenditure for Forestry was \$37,342.60 of which \$1,772.63 was expended for protecting the trees and shrubs from insects.

HYDROELECTRIC SERVICE

The hydroelectric power stations at the Wachusett Dam in Clinton and the Sudbury Dam in Southborough are operated by the water drawn for water supply from the reservoirs above these dams.

During the year 11,079,776 kilowatt hours of electric energy was developed at the power stations in 1932, or approximately 82 per cent of the usual output.

The value of the energy delivered in 1932 at contract prices is \$68,421.91 and deducting \$53,866.77, the expenditures charged to the operation of both stations and the Water Division transmission line, there was a profit of \$14,555.14.

Wachusett Station

The power station was operated on 245 working days during the year. On account of heavy rains in August, September and October the power station was not operated for about six weeks in the fall. The statistics are as follows:

Total energy developed (kilowatt hours)	6,854,300	
Energy used at power station (kilowatt hours)	31,990	
Available energy (kilowatt hours)		6,822,310
Water used (gallons)		33,725,500,000
Average head (feet)		91.03
Energy developed per million foot gallons (kilowatt hours)		2.233
Efficiency of station (per cent)		71.05

Credits:

Energy sold New England Power Company and Edison Electric Illuminating Company:		
6,613,699 kilowatt hours at \$0.00625	\$41,335.62	
Deduction of 2 per cent as provided in contract:		
132,274 kilowatt hours at \$0.00625	826.71	
Energy furnished Clinton Sewerage Pumping Station:		
208,611 kilowatt hours at \$0.00625	1,303.82	
		\$41,812.73

Charges:

Superintendence	\$1,703.33	
Labor, operating station	10,756.67	
Repairs and supplies	1,071.16	
Transmission line repairs and supplies	452.88	
	13,984.04	
Taxes	4,000.00	
Administration, general supervision, interest and sinking fund	11,199.58	
		\$29,183.62
Profit		\$12,629.11
Cost of available energy per thousand kilowatt hours		\$4.278

Expenditures of \$7,000 for replacement of generator insulation and of \$3,507.64 for transmission line replacements are not included, but are distributed over a period of 20 years and are included in the allowance for interest and sinking fund.

Sudbury Station

The Sudbury power station was operated every day during the year; on 231 days for 24 hours with three shifts and on 135 days for 16 hours with two shifts.

The statistics are as follows:

Total energy developed (kilowatt hours)	4,328,860	
Energy used at power station (kilowatt hours)	71,394	
Available energy (kilowatt hours)		4,257,466
Framingham Reservoir No. 3 service:		
Water used (gallons)		8,372,500,000
Average head (feet)		65.68
Weston Aqueduct service:		
Water used (gallons)		36,240,600,000
Average head (feet)		38.29
Energy developed per million foot gallons (kilowatt hours)		2.234
Efficiency of station (per cent)		71.1

Credits:

Energy sold Edison Electric Illuminating Company:		
4,257,466 kilowatt hours at \$0.00625		\$26,609.18

Charges:

Superintendence	\$1,659.23	
Labor, operating station	14,217.33	
Repairs and supplies	544.47	
		<hr/>
	\$16,421.03	
Taxes	1,984.00	
Administration, general supervision, interest and sinking fund	6,278.12	
		<hr/>
		\$24,683.15
Profit		\$1,926.03
Cost of available energy per thousand kilowatt hours		\$5.798

DISTRIBUTION PUMPING STATIONS

At the five distribution pumping stations 26,244 million gallons of water was pumped during 1932. This is 5,025 million gallons less than was pumped in 1931. The water pumped at the Chestnut Hill stations included 3,883 million gallons for the low service and 16,765 million gallons for the high service. The high service pumpage includes 54,210,000 gallons for a portion of the supply of the town of Brookline and 99,644,000 gallons for a portion of the supply of the city of Newton, and 618,000,000 gallons which was re-pumped at the Hyde Park Station for the southern extra high service. At the Spot Pond Station 4,345 million gallons was pumped for the northern high service and at the Arlington Station 633 million gallons was pumped for the northern extra high service. By arrangement with the city of Newton 552,948,000 gallons of water was repumped from the southern high service between November 27, 1931 and November 28, 1932 by the city at its Ward Street booster station for use on the high lands in Belmont and Watertown where satisfactory service cannot be furnished from the Chestnut Hill Station, and for this pumping the Commonwealth has paid the city \$7,159.51.

The average engine duties at the Water Division stations, based on plunger displacement and total coal used for all purposes, including heating and lighting the stations, are as follows:

Chestnut Hill Station No. 1, 131,573,991 foot pounds per 100 pounds of bituminous coal averaging 14,792 British thermal units per pound.

Chestnut Hill Station No. 2, 134,296,405 foot pounds per 100 pounds of mixed bituminous and anthracite coal averaging 14,463 British thermal units per pound.

Spot Pond Station, 106,443,004 foot pounds per 100 pounds of bituminous coal averaging 14,709 British thermal units per pound.

Arlington Station, 102,581,087 foot pounds per 100 pounds of bituminous coal averaging 14,738 British thermal units per pound.

Hyde Park Station, 74,559,850 foot pounds per 100 pounds of mixed bituminous and anthracite coal averaging 14,175 British thermal units per pound.

At the beginning of the year there was 1,217 gross tons of bituminous coal and 42 gross tons of anthracite screenings on hand at the pumping stations, and the amount on hand at the end of the year was 1,269 gross tons of bituminous coal and 261 gross tons of anthracite screenings. During the year 8,507 gross tons of bituminous coal and 1,054 gross tons of anthracite screenings were burned at the pumping stations.

Three old boilers which had been in service for 32 years in Chestnut Hill Station No. 2, were removed and three new vertical fire tube boilers 98 inches in diameter, built by the D. M. Dillon Steam Boiler Works under Contract No. 53-M were erected under Contract No. 54-M, and at the end of the year were being insulated with non-heat-conducting covering under Contract No. 57-M.

The work of installing flexible stay bolts in three old boilers in Chestnut Hill Station No. 1 and one old boiler in Chestnut Hill Station No. 2 under Contract No. 59-M, was in progress at the end of the year.

Four fuel oil storage tanks, built by the Massachusetts Engineering Company, Inc., under Contract No. 55-M were installed at the Chestnut Hill Pumping Stations and the work of installing fuel oil burning equipment at these stations, under Contract No. 56-M with the Peabody Engineering Corporation, was in progress at the end of the year.

The old underground armored electric lighting and power cables between Chestnut Hill Pumping Stations Nos. 1 and 2, which had been grounded in many places were replaced with new cables laid in underground conduits, and as a result the electric service has been greatly improved.

At all of the pumping stations the boilers have been regularly inspected and the machinery kept in dependable condition.

DISTRIBUTION RESERVOIRS

The locations, elevations and capacities of the distribution reservoirs of the Metropolitan Water Works are shown by the following table:

DISTRIBUTION RESERVOIRS AND LOCATIONS	Elevation of High Water ¹	Capacity in Gallons
Low Service:		
Spot Pond, Stoneham and Medford	163.00	1,791,700,000
Chestnut Hill Reservoir, Brighton district of Boston	134.00	300,000,000
Weston Reservoir, Weston	200.00	200,000,00
Mystic Reservoir, Medford	157.00	26,200,000
Northern High Service:		
Fells Reservoir, Stoneham	271.00	41,400,000
Bear Hill Reservoir, Stoneham	300.00	2,450,000
Northern Extra High Service:		
Arlington Reservoir, steel tank, Arlington	442.50	2,000,000
Southern High Service:		
Fisher Hill Reservoir, Brookline	251.00	15,500,000
Waban Hill Reservoir, Newton	264.50	13,500,000
Forbes Hill Reservoir, Quincy	192.00	5,100,000
Forbes Hill Standpipe, Quincy	251.00	330,000
Southern Extra High Service:		
Bellevue Reservoir, steel tank, West Roxbury district of Boston	375.00	2,500,000
Total	—	2,400,680,000

¹Elevation in feet above Boston City Base.

Powder Horn Hill Reservoir of the city of Chelsea is used when necessary for the northern high service. It has a capacity of 1,000,000 gallons with high-water line at elevation 196.6 and was in service from January 1 to April 16 and from December 3 to 31.

The Mystic and Forbes Hill reservoirs have been kept full of water for an emergency but were not used during the year. A store house with hollow tile walls, plastered inside and with stucco finish outside, was constructed at the Forbes Hill Reservoir.

The Lawrence basin of the Chestnut Hill Reservoir was out of service from January 1 to May 25 and from July 12 to October 4.

All other distribution reservoirs were in regular service throughout the year.

The Parks Division was paid \$3,135.31 for police service at Spot Pond, Fells and Bear Hill reservoirs.

DISTRIBUTION PIPE LINES

The new 60-inch diameter welded steel Weston Aqueduct Supply Main No. 4 was put into service November 15 from the Charles River at Commonwealth Avenue in Newton to North Harvard Street at Western Avenue in Boston, a distance of 5¾ miles.

November 17 Contract No. 60-M was made with L. P. Federico & Son for relaying the northerly of the two submerged pipe lines under the Neponset River in Hyde Park. The pipe line is 160 feet in length and 12 inches in diameter with flexible joints. It was laid in 1902 but was later disturbed by a dredge when the river was deepened and widened and the pipe line

was injured so that it could not be kept water-tight. Work under this contract was well advanced at the close of the year.

During the year 42 leaks were repaired in the distribution mains at a cost of \$3,221.32.

There are 88 Venturi meters, varying in size from 6 to 60 inches in diameter, in the distribution pipe lines; 73 of these are on connections supplying various towns in the Metropolitan Water District; 5 are on the Weston Aqueduct supply mains; 1 between the southern high service and the southern low service mains; 3 at the Arlington, Hyde Park and Spot Pond pumping stations; 1 at the city of Newton booster pumping station on Waban Hill; 2 on connections between the Weston Aqueduct supply mains and the local pipes in Washington Street, Newton; 1 on connection to the Fernald School in Waltham, and 2 on emergency connections with Cambridge and Wakefield distribution pipes. There are also 9 disc and 16 detector meters in use for measuring small quantities of water supplied at various places.

There are 6 pressure regulating valves in constant use for reducing pressure of water supplied to Revere, Swampscott and Winthrop, and the higher portions of Belmont, East Boston and Hyde Park.

Recording pressure gages have been maintained at 29 places on the distribution system and tables in the Appendix show the hydraulic grade at 16 of these stations as determined by the charts.

Pipes, specials and other materials and supplies required for maintaining and operating the pipe lines are kept on hand at the Glenwood pipe yard in Medford and the Chestnut Hill pipe yard in Brighton.

Auto trucks equipped with gate-operating attachments have been maintained with men on duty ready to operate them in case of emergency at any time during the day or night.

CONSUMPTION OF WATER

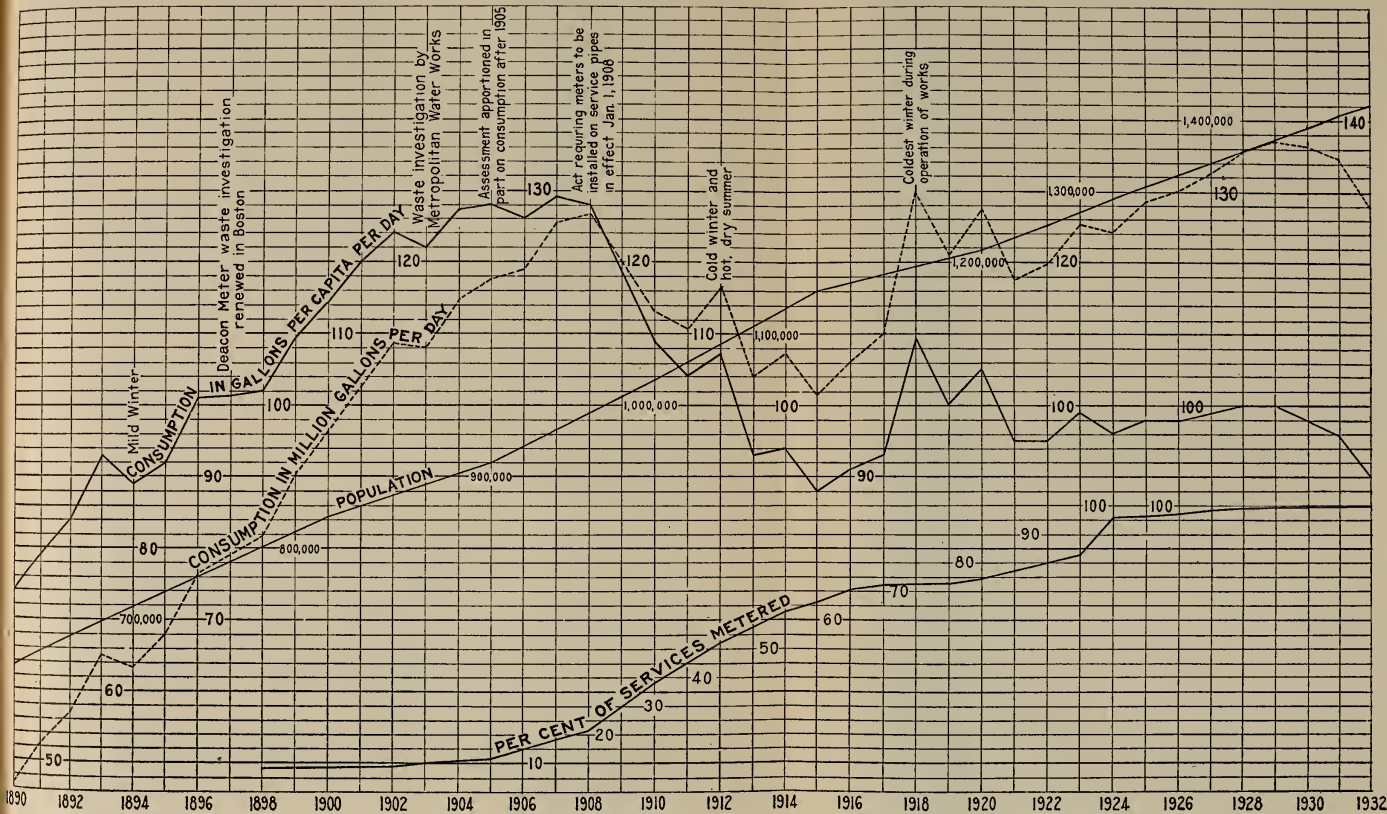
During the year 46,845,557,000 gallons of water was furnished from the Metropolitan Water Works to the 18 cities and towns regularly supplied. This is equivalent to an average daily consumption of 127,993,300 gallons, and for the estimated population of 1,422,170 is at the rate of 90 gallons per capita.

The town of Brookline, with an estimated population of 50,240, used from its local source 1,652,518,000 gallons of water, of which 382,339,000 gallons was supplied from elevation 375 and 1,270,179,000 gallons was supplied from elevation 250. In addition to this consumption the town was supplied with 54,210,000 gallons of water from elevation 250 by the Metropolitan Water Works, making the total average daily consumption of the town 4,663,200 gallons, equivalent to 93 gallons per capita.

The city of Newton, with an estimated population of 69,530, was supplied from its local sources, with the exception of 99,644,000 gallons, which was furnished from the Metropolitan supply. Including this water, the average daily consumption was 5,022,300, equivalent to 72 gallons per capita. The amount of water furnished the city of Newton from the Metropolitan supply is 86,144,000 gallons in excess of the quantity which the city is entitled to take free of charge under the agreement made in 1900 when the Waban Hill Reservoir was purchased from the city, and for this water the city will pay \$8,611.82.

The population, consumption of water and per cent of services metered in the Metropolitan Water District as supplied in 1932 and for the period from 1890 to 1932, inclusive, are shown graphically by the accompanying diagram.

POPULATION, CONSUMPTION OF WATER AND PER CENT OF SERVICES METERED
IN THE
METROPOLITAN WATER DISTRICT
AS SUPPLIED IN 1932
FROM 1890 TO 1932



Note: Estimated population and consumption per capita given on diagrams published in previous annual reports are revised from time to time as regular census figures become available.

	Estimated Popula- tion, 1932	AVERAGE DAILY CONSUMPTION				Decrease in Gallons
		1931		1932		
		Gallons	Gallons per Capita	Gallons	Gallons per Capita	
Arlington	40,390	1,997,900	52	1,926,800	48	71,100
Belmont	24,240	1,323,300	57	1,398,300	58	75,000 ¹
Boston	782,760	89,753,100	115	85,176,300	109	4,576,800
Chelsea	47,050	3,580,400	77	3,469,200	74	111,200
Everett	50,840	4,900,300	98	4,365,000	86	535,300
Lexington	10,130	647,800	66	674,300	67	26,500 ¹
Malden	61,010	3,882,700	65	3,585,100	59	297,600
Medford	64,590	3,341,100	53	3,370,300	52	29,200 ¹
Melrose	24,390	1,659,000	70	1,577,500	65	81,500
Milton	17,970	902,800	52	893,200	50	9,600
Nahant	1,680	205,000	123	202,400	120	2,600
Quincy	76,630	5,263,800	71	5,227,900	68	35,900
Revere	37,480	2,284,300	62	2,160,000	58	124,300
Somerville	106,490	10,135,500	96	9,093,400	85	1,042,100
Stoneham	10,390	686,600	67	715,800	69	29,200 ¹
Swampscott	10,850	799,300	75	770,200	71	29,100
Watertown	38,030	2,168,100	59	2,185,100	57	17,000 ¹
Winthrop	17,250	1,246,600	73	1,202,500	70	44,100
District supplied . .	1,422,170	134,777,600	96	127,993,300	90	6,784,300
Brookline	50,240	4,847,600	99	4,663,200	93	184,400
Newton	69,530	4,948,300	73	5,022,300	72	74,000 ¹
Total District . .	1,541,940	144,573,500	95	137,678,800	89	6,894,700

¹Increase.

The consumption by districts in 1932 as compared with 1931 is as follows:

	Gallons per Day 1932	DECREASE FROM 1931	
		Gallons per Day	Percent- age
Low service district, embracing the low-service districts of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown	65,825,100	5,692,400	7.96
Southern high-service district, embracing Quincy, the high-service district of Boston, except East Boston, and portions of Milton and Watertown	44,807,900	730,300	1.60
Southern intermediate high-service district, embracing portions of Belmont and Watertown	1,494,900	61,300 ¹	4.28 ¹
Northern high-service district, embracing Melrose, Nahant, Revere, Stoneham, Swampscott, and Winthrop and the high-service districts of Chelsea, East Boston, Everett, Malden, Medford and Somerville	12,475,200	396,200	3.08
Southern extra high-service district, embracing the higher portions of Hyde Park, Milton and West Roxbury	1,708,800	30,300 ¹	1.81 ¹
Northern extra high-service district, embracing Lexington and the higher portions of Arlington and Belmont	1,681,400	57,000	3.28
District Supplied	127,993,300	6,784,300	5.03
Brookline and Newton	9,685,500	110,400 ¹	1.13 ¹
Total District	137,678,800	6,894,700	4.77

¹Increase.

WATER FROM METROPOLITAN WATER WORKS SOURCES USED OUTSIDE
OF THE METROPOLITAN WATER DISTRICT

PLACES WHERE WATER IS USED	Total Quantity (Gallons)	Average Quantity (Gallons per Day)	Amount Charged
Town of Rutland	83,004,400 ¹	225,700	—
Town of Holden	41,842,500 ²	114,300	—
Westborough State Hospital	67,286,000	184,000	\$2,018.50
Town of Westborough	75,000,000	205,000	—
Town of Southborough	21,681,000	59,000	—
Town of Ashland	69,766,450	190,619	—
Town of Hopkinton	23,321,000	63,720	—
Town of Framingham	481,642,000	1,316,000	11,476.01
Town of Natick	276,880,000	757,000	—
United States Army Reservation at Peddock's Island in Hull	2,043,000 ³	5,580	178.80
Portion of Town of Braintree	192,000 ⁴	520	—
Portion of Town of Winchester	594,000 ⁵	1,620	—
Portion of Town of Saugus	606,000 ⁶	1,660	—
Metropolitan Parks, Middlesex Fells	6,327,000	17,290	—
Walter E. Fernald State School and Metropolitan State Hospital	128,289,000	350,516	11,394.09

Notes: — Water is used throughout the year in all places.
The average daily use is in all cases figured on basis of 366 days.
¹All but 404,000 gallons diverted from watershed.
²Not diverted from watershed.
³Water supplied by the Commission through City of Quincy pipes, and by agreement revenue is divided in equal shares between the City and Commonwealth.
⁴The City of Quincy supplies the water and pays the Commonwealth by an addition to its regular apportionment.
⁵The Town of Arlington supplies the water and pays the Commonwealth by an addition to its regular apportionment.
⁶The City of Melrose supplies the water and pays the Commonwealth by an addition to its regular apportionment.

Information regarding the installation of meters on service pipes by the municipalities supplied with water from the Metropolitan Water Works for the year 1932 and other statistics are given in tables in the Appendix.

Respectfully submitted,

BOSTON, January 2, 1933.

WILLIAM E. FOSS,
Director and Chief Engineer.

REPORT OF DIRECTOR AND CHIEF ENGINEER OF SEWERAGE DIVISION

DAVIS B. KENISTON, *Commissioner, Metropolitan District Commission.*

DEAR SIR: — The following report of the operations of the Metropolitan Sewerage Division for the year ending December 31, 1932, is respectfully submitted:

ORGANIZATION

The Director and Chief Engineer has charge of the design and construction of all new works, and of the maintenance and operation of all the works controlled by the Metropolitan District Commission for removing sewage from the thirty-three municipalities which comprise the Metropolitan Sewerage District.

The following assistants have been employed during the year:

Henry T. Stiff, Associate Civil Engineer, in charge of office and drafting room and of the construction work.

Ralph W. Loud, Senior Civil Engineer, in charge of survey work and field work in connection with the New Neponset Valley Sewer construction and the High-Level Sewer Extension to Newton.

Charles F. Fitz, Assistant Civil Engineer, in charge of maintenance studies and of maintenance construction work on the North Metropolitan System.

Benjamin Rubin, Assistant Civil Engineer, in charge of survey work and field work in connection with the Braintree-Weymouth Branch Sewer construction.

Seth Peterson, Superintendent, North Metropolitan Sewerage District.

Forrest F. Harbour, Superintendent, South Metropolitan Sewerage District.

In addition to the above, the maximum number of engineering and other assistants employed during the year was 41, which includes 6 assistant engineers, 10 instrumentmen, 1 supervising sewer construction inspector, 7 inspectors, 1 draftsman, 13 rodmen and engineering assistants, 1 chauffeur and 2 stenographers.

OBITUARY

The Metropolitan Sewerage Division has been unfortunate during this year because of the death of two important officials in its service. Mr. Frank B. Williams, Superintendent of the South Metropolitan Sewerage District, died April 9, 1932. Mr. Williams was a man of large experience in the construction of public works both as a designing and as a construction engineer. Mr. Arthur F. F. Haskell, Superintendent of the North Metropolitan Sewerage District, died September 7, 1932. Mr. Haskell had been in the employ of the Commission for many years as engineer of construction and had held the office of superintendent since February 2, 1920. These men were valuable assistants. Their positions were filled by the promotion of men in the service.

METROPOLITAN SEWERAGE DISTRICTS

AREAS AND POPULATIONS

During the year no additions to the area of the Metropolitan Sewerage Districts have been made.

The populations of the districts, as given in the following table, are based on the census of 1930.

CITY OR TOWN		Area (Square Miles)	Estimated Population	
North Metropolitan District	Arlington	5.20	41,320	
	Belmont	4.66	24,780	
	Boston (portions of)	3.45	94,540	
	Cambridge	6.11	115,670	
	Chelsea	2.24	47,370	
	Everett	3.34	51,370	
	Lexington ¹	5.11	6,180	
	Malden	5.07	61,680	
	Medford	8.35	65,660	
	Melrose	3.73	24,660	
	Reading	9.82	10,410	
	Revere	5.86	37,900	
	Somerville	3.96	107,080	
	Stoneham	5.50	10,460	
	Wakefield	7.65	16,870	
	Winchester	5.95	13,290	
	Winthrop	1.61	17,340	
	Woburn	12.71	19,740	
		100.32		766,320
South Metropolitan District	Boston (portions of)	24.96	389,650	
	Braintree	13.44	17,100	
	Brookline	6.81	50,870	
	Canton	17.84	5,820	
	Dedham ¹	9.40	14,550	
	Milton	12.59	18,310	
	Needham	12.50	11,720	
	Newton	16.88	70,440	
	Norwood	10.16	15,540	
	Quincy	12.56	77,640	
	Stoughton	16.23	8,400	
	Walpole	20.54	7,690	
	Waltham ²	13.63	42,990	
	Watertown	4.04	38,690	
	Wellesley	9.89	12,530	
	Weymouth	16.46	21,730	
		217.93		803,670
Totals		318.25		1,569,990

¹Part of Town.

²Including 1,754 in the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital, authorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

Metropolitan Sewers

SEWERS PURCHASED AND CONSTRUCTED AND THEIR CONNECTIONS

During the year there have been 3.865 miles of Metropolitan sewers built within the sewerage districts, so that there are now 139.772 miles of Metropolitan sewers. Of this total, 9.642 miles of sewers, with the Quincy Pumping Station, have been purchased from cities and towns of the districts. The remaining 130.130 miles of sewers and other works have been constructed by the Metropolitan Boards.

The locations, lengths and sizes of these sewers are given in the following tables, together with other data referring to the public and special connections with the systems:

NORTH METROPOLITAN SEWERAGE SYSTEM

Location, Length and Sizes of Sewers, with Public and Special Connections

CITY OR TOWN	Size of Sewers	Length in Miles	Public Con- nections, Decem- ber 31, 1932	SPECIAL CONNECTIONS	
				Character or Location of Connection	Number in Operation
Boston:					
Deer Island.	4'0'' to 9'0''	1.653	4	Doctor's House	1
East Boston	9' 0'' to 1' 0''	5.467	25	Shoe Factory	1
				Middlebrook Wool-combing Co.	1
Charlestown	6' 7'' x 7' 5'' to 1' 0'' . . .	3.292	15	Navy Yard	9
				Private building	1
				H. P. Hood & Sons, Inc. . . .	1
Winthrop .	9' 0''	2.864	14	Club House	1
				Fire Department station . .	1
				Private building	1
				Bakery	1
				Rendering Works	1
Chelsea . .	8' 4'' x 9' 2'' to 15'' . . .	5.230	14	Metropolitan Water Works blow-off	1
				Chelsea Water Works blow- offs	2
				Naval Hospital	1
				U. S. Lighthouse Service . .	1
				Metropolitan Water Works blow-off	1
				Cameron Appliance Co. . . .	1
Everett . .	8' 2'' x 8' 10'' to 4' 8'' x 5' 1''.	2.925	10	Shultz-Goodwin Co.	1
				Andrews-Wasgatt Co.	1
				National Metallic Bed Co. . .	1
				Linoide Co.	1
				Factory	2
				New England Structural Co. .	1
				Beacon Oil Co.	1
				Everett Factories and Terminal Corp.	1
Lexington ¹ .	1' 3''	-	1	-	-
				Metropolitan Water Works blow-offs	5
Malden . .	4' 6'' x 4' 10'' to 1' 0'' . . .	5.844 ²	35	Private buildings	238 ³
				Factory	1
				Bakery	1
				Swift & Co.	1
				Holy Cross Cemetery office .	1
Melrose . .	4' 6'' x 4' 10'' to 10'' . . .	6.099 ⁴	42	Private buildings	133 ⁵
				Factory	1
				Railroad station	1
				Park Department bath-house .	2
				Harvard dormitories	2
Cambridge .	5' 2'' x 5' 9'' to 1' 3'' . . .	7.899	53	Slaughterhouse	1
				City Hospital	3
				Street Railway machine shop .	1
				Private buildings	3
				Factory building	1
				Tannery	1
				Slaughterhouses (3)	1
				Carhouse	1
Somerville .	6' 5'' x 7' 2'' to 10'' . . .	3.577	16	Somerville Water Works blow- off	1
				Street railway power house .	1
				Stable	1
				Rendering works	1
				Railroad scale pit	1
				Private building	1

¹The Metropolitan Sewer extends but a few feet into the town of Lexington.
²Includes 1.84 miles of sewer purchased from the city of Malden.
³Mostly buildings connected with sewers formerly belonging to city of Malden but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 215 of the Acts of 1898 and by the Metropolitan Water and Sewerage Board in accordance with Chapter 512 of the Acts of 1911 and made parts of the North Metropolitan Sewerage System.
⁴Includes 0.736 of a mile of sewer purchased from the city of Melrose.
⁵Mostly buildings connected with a sewer formerly belonging to the city of Melrose but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 414 of the Acts of 1896 and with a sewer extension built in accordance with Chapter 436 of the Acts of 1897 by the Metropolitan Sewerage Commission as an outlet for part of the town of Stoneham and made parts of the North Metropolitan Sewerage System.

NORTH METROPOLITAN SEWERAGE SYSTEM — *Concluded*

Location, Length and Sizes of Sewers, with Public and Special Connections —
Concluded

CITY OR TOWN	Size of Sewers	Length in Miles	Public Con- nections, Decem- ber 31, 1932	SPECIAL CONNECTIONS	
				Character or Location of Connection	Number in Operation
Medford . .	6' 0" x 6' 3" to 10" . .	7.530	28	Armory building	1
				Private buildings	9
				Stable	1
				Police substation	1
				Tanneries	6
				Private buildings	12
				Gelatine factory	1
				Watch-hand factory	1
				Stable	1
Winchester . .	4' 6" to 1' 3"	10.420 ³	34	Railroad station	3
				Felt works	1
				Town Hall	1
				Bay State Saw & Tool Co.	1
				Whitney Machine Co.	1
				Metropolitan Sewerage Divi- sion	1
Stoneham . .	1' 8" to 10"	2.333	9	Water and Sewer Department	1
Woburn . .	2' 6" x 2' 7" to 1' 3"	1.186	4	Glue factory	4
				Private building	1
				Private buildings	235 ²
				Railroad station	1
				Car house	3
				Post office	1
Arlington . .	3' 0" x 3' 6" to 10"	6.249 ¹	64	Town of Arlington garage	1
				Town of Arlington workshop	1
				The Theodore Schwamb Co., Inc.	2
				Arlington Gas Light Co.	1
				Edison Transformer Station	1
				Arlington High School	1
				Laundry	1
Belmont . .	1' 3" to 2' 6"	0.008	5	—	—
Wakefield . .	3' 0" to 2' 0" x 2' 3"	0.703	1	—	—
Revere . .	4' 0" to 15"	0.136	3	—	—
Reading . .	1' 4" to 3' 0"	0.055	1	—	—
		73.470 ³	378		733

¹Includes 2.631 miles of sewer purchased from the town of Arlington.

²Mostly buildings connected with a sewer formerly belonging to the town of Arlington but later pur-
chased by the Metropolitan Sewerage Commission in accordance with Chapter 520 of the Acts of 1897 and
made a part of the North Metropolitan Sewerage System.

³Includes 2.787 miles of Old Mystic Valley Sewer in Medford and Winchester, running parallel with
the Metropolitan Sewer.

SOUTH METROPOLITAN SEWERAGE SYSTEM

Location, Length and Sizes of Sewers, with Public and Special Connections

CITY OR TOWN	Size of Sewers	Length in Miles	Public Con- nections, Decem- ber 31, 1932	SPECIAL CONNECTIONS	
				Character or Location of Connection	Number in Operation
Boston: Back Bay . .	6' 6" to 3' 9"	1.500 ¹	17	Tufts Medical School	1
				Private house	1
				Administration Building, Bos- ton Park Department	1
				Simmons College Buildings	1
				Art Museum	1
				Prince District Elementary School	1
Brighton . .	7' 0" to 12"	6.035 ²	16	Private building	2
				Abattoir	3
				Boston & Albany Railroad yard	2

¹Includes 0.355 of a mile of sewer purchased from the city of Boston.

²Includes 0.446 of a mile of pipe and concrete sewers built for the use of the city of Boston; also 0.026
of a mile of sewer purchased from the town of Watertown.

SOUTH METROPOLITAN SEWERAGE SYSTEM — *Concluded*
Location, Length and Sizes of Sewers, with Public and Special Connections —
Concluded

CITY OR TOWN	Size of Sewers	Length in Miles	Public Con- nec- tions, Decem- ber 31, 1932	SPECIAL CONNECTIONS	
				Character or Location of Connection	Number in Operation
Dorchester .	3' x 4' to 2'6'' x 2'7'' . . .	2.870 ¹	14	Chocolate works	2
				Machine shop	1
				Paper Mill	1
				Private buildings	4
				Edison Electric Company Sta- tion	1
Hyde Park .	10' 7'' x 11' 7'' to 4' 0'' x 4' 1''	4.527	19	Mattapan Paper Mills	2
Roxbury .	6' 6'' x 7' to 4' 0''	1.430	—	Private buildings	2
				Fairview Cemetery buildings .	1
West Roxbury	9' 3'' x 10' 2'' to 12''	7.643	26	—	—
				Caledonia Grove buildings . .	1
				Parental School	1
				Lutheran Evangelical Church .	1
				The Whittemore Co. . . .	1
Brookline .	6' 6'' x 7' 0'' to 8''	2.540 ²	14	Private buildings	7
Dedham .	4' x 4' 1'' to 2' 9'' x 3'	5.012	10	Private buildings	2
				Private buildings	2
Hull ³ . . .	60'' pipe	0.750	—	Dedham Carpet Mills	1
Milton . . .	11' x 12' to 8''	7.084	32	—	—
				Private buildings	4
Newton . . .	4' 2'' x 4'9'' to 1' 3''	2.911	11	Private houses	16
				Laundry	1
Quincy . . .	11' 3'' x 12' 6'' to 16'' pipe . .	7.742	28	Metropolitan Water Works blow-off	1
				Squantum schoolhouse	1
Waltham .	3' 6'' x 4' 0''	0.001	1	—	—
Watertown .	4' 2'' x 4' 9'' to 12''	0.750 ⁴	8	Private building	2
				Factories	2
				Stanley Motor Carriage Co. . .	1
				Knights of Pythias building . .	1
				Walker Gordon Co. . . .	2
Needham .	2' 0'' x 2' 3'' to 2' 3'' x 2' 6'' . .	4.921	1	Private buildings	7
Wellesley ⁵ .	2' 0'' x 2' 3''	—	1	—	—
Canton ⁶ .	4' 6'' x 5' 0'' to 20''	6.612	—	—	—
Norwood .	4' 0'' x 4' 3'' to 30'' pipe	2.844	2	—	—
Stoughton ⁶ .	—	—	—	Bird & Son, Inc. . . .	1
Walpole .	—	—	—	—	—
Braintree ⁶ .	30'' pipe	0.071	1	—	—
Weymouth ⁶ .	4' 9'' x 5' 0'' to 30'' pipe	1.059	—	—	—
		66.302	201		
					83

¹Includes 1.24 miles of sewer purchased from the city of Boston.
²Includes 0.158 of a mile of pipe sewer built for the use of the town of Brookline.
³Hull is not a part of the Metropolitan Sewerage District.
⁴Includes 0.025 of a mile of sewer purchased from the town of Watertown.
⁵The Metropolitan Sewer extends but a few feet into the town of Wellesley.
⁶No Metropolitan trunk sewer has been completed to give these towns an outlet.

Information relating to areas, populations, local sewer connections and other data for the Metropolitan sewerage districts appears in the following table:

North Metropolitan Sewerage District

Area (Square Miles)	Estimated Total Population	Miles of Local Sewer Connected	Estimated Population Contributing Sewage	Ratio of Contributing Population to Total Population (Per Cent)	CONNECTIONS MADE WITH METROPOLITAN SEWERS	
					Public	Special
100.32	766,320	971.65	714,020	93.2	378	733

South Metropolitan Sewerage District

217.93	803,670	997.98	595,290	74.1	201	83
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Both Metropolitan Sewerage Districts

318.25	1,569,990	1,969.63	1,309,310	83.4	579	816
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Of the estimated gross population of 1,569,990 on December 31, 1932, 1,309,310, representing 83.4 per cent, were on that date contributing sewage to the Metropolitan sewers, through a total length of 1,969.63 miles of local sewers owned by the individual cities and towns of the districts.

These sewers are connected with the Metropolitan Systems by 579 public and 816 special connections. During the current year there has been an increase of 58.07 miles of local sewers connected with the Metropolitan Systems, and 10 public and 3 special connections have been added.

CONSTRUCTION

North Metropolitan Sewerage System

EXTENSION OF MILL BROOK VALLEY SEWER IN ARLINGTON

The only construction work in the North Metropolitan Sewerage District is that of the continuation of building Section 82 of the North Metropolitan System in Arlington. The particulars of this contract were given in last year's report. This work was completed and the sewer put in operation on June 1, 1932.

To complete the sewer in Mill Brook Valley to the Lexington town line will require one additional contract. This construction work has not yet been authorized by the Legislature.

South Metropolitan Sewerage System

EXTENSION OF HIGH-LEVEL SEWER IN BRIGHTON AND NEWTON

In addition to the work previously authorized in the South District, the Legislature by Chapter 205 of the Acts of 1932 authorized the extension of the High-Level Sewer from its present terminus is Oak Square, Brighton, to the Brighton-Newton line. This extension will serve the purpose of relieving the present Charles River Valley Sewer by intercepting the sewage from a considerable portion of the higher parts of Newton now tributary to it and discharging the same into the High-Level Sewer by gravity.

SECTION 87, HIGH-LEVEL SEWER IN BRIGHTON AND NEWTON

A contract for the construction of this section of sewer has been made by the Commission, some particulars of which are as follows:

Date of Contract No. 64, (Sewerage Division) December 29, 1932.

Name of Contractor, P. DeCristofaro Company, Incorporated.

Length of Section, 1,960 feet.

Size of concrete sewer, 5 feet 3 inches by 5 feet 6 inches.

Length of tunnel, 1,430 feet.

Length of open-cut trench, 530 feet.

Depth of excavation in trench, from 19 feet to 22 feet.

Depth of excavation in tunnel, from 22 feet to 31 feet.

Assistant Engineer in immediate charge of the section, Ralph W. Loud.

No work has been done under this contract up to the present time.

NEW NEPONSET VALLEY SEWER

Contracts for the construction of Sections 109 (Part of), 110 (Part of), 114, 117, 118, 119 and 120 have been completed during the year.

Notice was given by the Commission to Norwood and Walpole that the New Neponset Valley Sewer had been so far completed as to enable them to make use of the same on June 30, 1932. These towns have made connections with the Metropolitan Sewer.

NEW NEPONSET VALLEY SEWER, SECTION 121

A contract was let for the construction of this section, some particulars of which are as follows:

Date of Contract No. 56, (Sewerage Division) March 31, 1932.

Name of Contractor, V. Barletta Company.

Length of Section, 5,483 feet.

Length of 20-inch vitrified pipe sewer, 4,200 feet.

Length of 27-inch by 36-inch concrete sewer, 883 feet.

Length of sewer in tunnel, 400 feet.

Depth of sewer in trench, from 4 feet to 28 feet.

Depth of sewer in tunnel, from 20 feet to 31 feet.

Assistant Engineer in immediate charge of the section, Nathan Levy.

During the year work on this section has been carried on and at the present time 160 feet of tunnel have been excavated, 883 feet of 27-inch by 36-inch concrete sewer have been constructed and 1,260 feet of 20-inch vitrified pipe have been laid. The Metropolitan Sewer is now completed as far as Washington Street, Canton, and is ready for the town of Canton to connect its sewers up to that point.

SQUANTUM PUMPING STATION, QUINCY

The construction work on this pumping station was completed and notice given to the city of Quincy early in September, 1932, that the sewers of Squantum might be connected therewith. The station was put into operation during September.

BRAINTREE-WEYMOUTH BRANCH

At the end of the year 1931 but one contract had been let for the construction of the Braintree-Weymouth Branch, namely, Section 125. Particulars of this contract were given in last year's report. Work has been continued on this section and it is practically completed with the exception of some backfilling and minor details.

BRAINTREE-WEYMOUTH BRANCH, SECTION 123

A contract was let for the construction of this section, some particulars of which are as follows:

Date of Contract No. 58, (Sewerage Division) May 26, 1932.

Name of Contractor, Bay State Dredging and Contracting Company.

Length of Section, 1,635 feet.

Structure, 48-inch cast-iron pipe.

Greatest depth of trench below mean low water, 43 feet, of which the lower 8 feet were largely in slate rock.

Assistant Engineer in immediate charge of the section, Benjamin Rubin.

Work on this section has been completed.

BRAINTREE-WEYMOUTH BRANCH, SECTION 124

A contract was let for the construction of this section, some particulars of which are as follows:

Date of Contract No. 60, (Sewerage Division) July 21, 1932.

Name of Contractor, C. & R. Construction Company.

Length of Section, 3,083 feet.

Length of 4 feet 9 inches by 5 feet concrete sewer in trench, 1,701 feet.

Length of 42-inch cast-iron pipe sewer, 32 feet.

Length of 4 feet 9 inches by 5 feet concrete sewer in tunnel, 1,350 feet.

Depth of sewer in trench, from 10 feet to 26 feet.

Depth of sewer in tunnel, from 16 feet to 45 feet.

Assistant Engineer in immediate charge of the section, Benjamin Rubin.

Work has been carried on during the year on this section and 1,450 feet of sewer in trench have been completed and 400 feet of earth tunnel have been excavated. No sewer has yet been placed in the tunnel. In the construction of the earth tunnel serious difficulties were encountered, the bottom of the excavation most of the way being in very fine wet sand and the upper part of the excavation being in loose gravel. In order to un-water the fine sand in the bottom, the Contractor found it advantageous to introduce a well-point system connected with a suction pump. The use of this system has enabled the Contractor to proceed by open tunnel methods through difficult land which otherwise might have required compressed air tunnel methods. The system of drainage used is that of the More-trench Corporation of Rockaway, New Jersey. This is the first time this method has been used in tunnel work on the Metropolitan Sewerage Works.

BRAINTREE-WEYMOUTH BRANCH, SECTION 122.

A contract was let for the construction of this section, some particulars of which are as follows:

Date of Contract No. 62, (Sewerage Division) October 27, 1932.

Name of Contractor, A. D. Daddario.

Length of Section, 5,530 feet.

Dimensions of concrete sewer, 5 feet by 5 feet 3 inches and 4 feet 9 inches by 5 feet.

Depth of sewer in trench, from 9 feet to 29 feet.

Assistant Engineer in immediate charge of the section, Benjamin Rubin.

Work has been continued on this section and at the present time 525 feet of sewer have been completed. In parts of this section very lively quick-sands were encountered. In order to carry out the work the Contractor has made use of the system devised by the More-trench Corporation of Rockaway, New Jersey, of well-points connected to a suction pump. This method has been effective and work has been carried on thereby without extreme difficulties.

BRAINTREE-WEYMOUTH PUMPING STATION, QUINCY

The sub-filling for a roadway from Kilby Street, Hough's Neck, Quincy, to the site of the proposed pumping station was placed on the southerly side of the Metropolitan Sewer embankment.

Bids were received for the construction of the foundation and substructure work at the Braintree-Weymouth Pumping Station in Quincy on December 29, 1932. No award has yet been made.

PUMPING EQUIPMENT FOR BRAINTREE-WEYMOUTH PUMPING STATION

A contract for furnishing the pumping equipment for this station was entered into by the Commission, some particulars of which are as follows:

Date of Contract No. 61, (Sewerage Division) August 18, 1932.

Name of Contractor, Turbine Equipment Company of New England.

The pumping machinery for this station is to consist of two units, each consisting of a 15,000,000 gallon DeLaval centrifugal pump operating under a head of 30 feet actuated by a 150 HP direct connected Diesel-Winton engine, together with all accessories appertaining. The machinery for this station is now being manufactured.

Maintenance

SCOPE OF WORK AND FORCE EMPLOYED

The maintenance of the Metropolitan Sewerage System includes the operation of 9 pumping stations, the Nut Island screen-house and 139.772 miles of Metropolitan sewers, receiving the discharge from 1,969.63 miles of town and city sewers at 1,395 points, together with the care and study of inverted siphons under streams and in the harbor.

At present the permanent maintenance force consists of 193 men, of whom 117 are employed on the North System and 76 on the South System. These are subdivided as follows:

North Metropolitan System, 74 engineers and other employees in the pumping stations and 43 men, including foremen, on maintenance, care of sewer lines, buildings and grounds; South Metropolitan System, 46 engineers and other employees in the pumping stations and 30 men, including foremen, on maintenance, care of sewer lines, buildings and grounds.

The regular work of this department, in addition to the operation of the pumping stations, has consisted of routine work of cleaning and inspecting sewers and siphons, caring for tide gates, outfall sewers, regulators and overflows, measuring flow in sewers, inspection of connections to the Metropolitan sewers, and the care of pumping stations and other buildings, grounds and wharves.

In addition to these regular duties, other work has been done by the maintenance employees in this department as follows: —

EAST BOSTON PUMPING STATION

In the report of the Metropolitan Sewerage Works for 1931, mention was made of the beginning of retubing of the six vertical boilers in this station and removing of two old and the installation of two new Green economizers. This work was completed during 1932.

Most of the machinist work in connection with the maintenance and repairs of the pumping units of the North Metropolitan Sewerage Pumping Stations is done at the general machine shop at this station. This work increases with the age of the units and the shop had become too small for handling the work. To provide larger quarters, the brick partition at the south end of the shop was moved about nine feet into the space originally used for men's dressing room and lockers. This arrangement leaves suitable room for the men and increases the machine shop by about 270 square feet of floor space. At the same time a ceiling of reinforced concrete construction was placed midway in height over the men's room and the space thus afforded by using this as a floor furnished a loft for storage purposes which is directly connected with the machine shop by stairs. This arrangement enabled the introduction of an additional planer, two additional small lathes and an additional drill press to the machine shop equipment.

The condenser for engine No. 4 had become so badly corroded by the hot salt water that it was necessary to make extended repairs. These consisted of a new cast-iron base and two cast-iron cylinders with brass liners. Patterns for this work were made by the maintenance mechanics and all the machine work and installation were done by the maintenance men.

DEER ISLAND PUMPING STATION

At this station are four Scotch boilers installed in 1910. It was found necessary to retube these boilers. The work was done under contract by the Hodge Boiler Works.

The four sewage screens at this station had become so badly corroded that repairs were no longer practical. Bids were solicited for the removal of the old ones and for the furnishing and installing of new ones. The work was completed by the Daniel Russell Boiler Works, the lowest bidder.

QUINCY PUMPING STATION

The condenser pump used for pumping unit No. 2 at this station was installed in 1898. Extensive repairs were made on it by the maintenance

employees. These consisted of new steam and water cylinders, liners, pistons and valve rods. This pump as now repaired is suitable for condenser use in connection with the new 15,000,000 gallon pumping unit at this station.

As originally constructed this station had two duplex reciprocating Deane pumps, one of 3,000,000 and one of 5,000,000 gallons of sewage per 24 hours capacity. To these were added a 10,000,000 gallons per 24 hours Lawrence centrifugal pump driven by a compound Sturtevant engine in 1907. Later (1923) the 3,000,000 gallon Deane pumping unit was replaced by a Morris pump and a Morris compound engine of 10,000,000 gallons per 24 hours capacity.

The 5,000,000 gallon Deane pumping unit was removed this year and in its place has been installed a 15,000,000 gallon DeLaval pump actuated by a Fitchburg vertical uniflow engine. The placing of this unit is nearly completed and it will be ready for use early in the coming year. This unit was furnished f.o.b. cars Quincy by the Turbine Equipment Company of New England and was erected by the maintenance employees. Testing of the unit was done at the plants of the manufacturers and was witnessed by a testing engineer representing the Commission. It passed the tests and a bonus as provided in the contract was paid because of excellence of performance.

SQUANTUM PUMPING STATION

This station was completed and put into operation on September 12, 1932. The two pumping units consist each of a vertical DeLaval pump actuated by a 60 HP Crocker-Wheeler motor capable of lifting 4,000,000 gallons of sewage per 24 hours against a total head of 46 feet. A reservoir capable of holding 300,000 gallons of sewage was built and this station is arranged to act automatically. No constant attendants are employed. The operation of the station is supervised by the engineer of the Nut Island Station.

Sewage from the station is discharged through a cast-iron force main into the Boston Main Drainage works at Squantum Head as authorized by the Legislature in Chapter 240 of the Acts of 1928.

HOUGH'S NECK PUMPING STATION

The electric energy required to operate the Hough's Neck Pumping Station is produced by generators in the Nut Island Screen House and is transmitted over a distance of one-half mile through underground conduits. The lead covered cables which carry this current were installed originally in 1910. The lead casing had become so badly corroded that it was necessary to replace them by new ones. These were purchased by the Commission and the work of laying was done by an arrangement with the Quincy Electric Light and Power Company who had special appliances for this work. The connections and finishing work were done by maintenance employees.

GASOLINE IN PUBLIC SEWERS

During the year the usual precautions have been maintained against the introduction of gasoline into the Metropolitan sewers. An inspector who covers both North and South Metropolitan Sewerage Districts has been employed. His duties are to see that all newly constructed garages or other gasoline-using establishments are supplied with a proper gasoline separator and also to see that these separators are kept in working condition.

During the year 1932 the number of permits issued by the municipalities in the Sewerage Districts for the construction of garages and other places where gasoline is used was 205. Each of these permits necessitates an examination by our inspector. Many of them are attended to through the mails and do not require a personal visit. Visits are made, however, to all locations where a connection is to be made with the public sewerage system and to such places as do not respond to the return postal cards sent out. During the year 20 such places were connected with the sewers that empty into the Metropolitan Systems. At the present time, there are, according to our records, 1,631 garages and other establishments where gasoline is

used connected with the local sewerage systems which discharge into the Metropolitan sewers.

This system of inspection has improved the gasoline situation in regard to the danger to the sewers. Occasionally odors of gasoline are detected in the sewers. These are reported to the Public Safety Department which alone has statutory control of the distribution and handling of gasoline in the Commonwealth.

NORTH METROPOLITAN SEWERAGE SYSTEM

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1932)

CITIES AND TOWNS	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection ¹	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage Sq. Miles	Area Ultimately to Contribute to Sewage Sq. Miles	Ratio of Contributing Population to Present Total Population Per Cent.	Ratio of Contributing Area to Ultimate Area Per Cent.
Boston (Deer Island)	0.70	Separate.	—	—	940 ²	940	—	—	—	—
Winthrop	33.30	Separate.	3,836	4.5	17,260	17,340	1.41	1.61	99.5	87.6
Boston (East Boston)	35.02	Separate and combined	5,502	10.6	58,320	61,100	1.23	2.18	95.5	56.4
Chelsea	32.88	Separate and combined	4,847	9.6	46,530	47,370	1.22	2.24	98.2	54.5
Everett	53.46	Separate and combined	6,672	7.6	50,710	51,370	2.15	3.34	98.7	64.4
Malden	78.54	Separate.	9,456	6.4	60,520	61,680	3.48	5.07	98.1	68.6
Melrose	50.83	Separate.	5,013	4.7	23,560	24,660	2.26	3.73	95.5	60.6
Boston (Charlestown)	22.04	Separate and combined	5,603	5.75	32,220	32,500	0.67	1.27	99.1	52.8
Cambridge	164.74	Separate and combined	19,120	6.0	114,720	115,670	5.17	6.11	99.2	84.6
Somerville	106.41	Separate and combined	17,927	5.9	105,770	107,080	3.67	3.96	98.8	92.7
Medford	93.08	Separate.	10,601	6.1	64,670	65,660	4.31	8.35	98.5	51.6
Winchester	42.61	Separate.	2,931	4.45	13,040	13,290	2.01	5.95	98.1	33.8
Woburn	23.19	Separate.	1,699	5.6	9,510	19,740	1.19	12.71	48.2	9.4
Stoneham	20.17	Separate.	1,510	4.5	6,800	10,460	1.02	5.50	65.0	18.5
Arlington	61.57	Separate.	6,061	6.0	36,370	41,320	2.89	5.20	88.0	55.6
Belmont	46.06	Separate.	3,401	6.7	23,460 ³	24,780	2.17	4.66	94.7	46.6
Wakefield	26.47	Separate.	1,683	5.1	8,580	16,870	1.11	7.65	50.9	14.5
Lexington	16.58	Separate.	724	4.0	2,900 ⁴	6,180	0.94	5.11	46.9	18.4
Revere	52.97	Separate.	5,302	6.8	36,050	37,900	2.49	5.86	95.1	42.5
Reading	11.03	Separate.	510	4.1	2,090	10,410	0.53	9.82	20.1	5.4
Totals	971.65	—	112,398	6.4	714,020	766,320	39.92	100.32	93.2	39.8

¹Estimated from Assessors' statement of the number of houses in each city or town on April 1, 1932 and the population from census of 1930.
²Estimated by Superintendent of the Institution on Deer Island.
³Including 2 connections with McLean Hospital, having an estimated population of 673.
⁴Part of town not included in Metropolitan Sewerage District.

SOUTH METROPOLITAN SEWERAGE SYSTEM

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1932.)

CITIES AND TOWNS	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection ¹	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage Sq. Miles	Area Ultimately to Contribute to Sewage Sq. Miles	Ratio of Contributing Population to Present Total Population Per Cent	Ratio of Contributing Area to Ultimate Area Per Cent
Boston (Back Bay)	27.83	Separate and combined	2,237	19.5	43,620	43,950	1.17	1.61	99.2	72.7
Boston (Brighton)	74.36	Separate and combined	5,966	10.2	60,850	61,200	3.39	3.74	99.4	90.6
Brookline	92.77	Separate and combined	7,149	7.05	50,400	50,870	4.21	6.81	99.1	61.8
Newton	180.50	Separate	12,766	5.4	68,940	70,440	9.26	16.88	97.9	54.9
Watertown	66.80	Separate	6,023	6.3	37,940	38,690	2.92	4.04	98.1	72.3
Waltham	63.06 ³	Separate	5,222	7.8	42,490 ⁷	42,990 ⁷	3.47	13.63	98.8	25.5
Boston (Dorchester)	73.50	Separate and combined	8,327	10.8	90,040 ²	129,000 ²	2.95	4.89	69.8	60.3
Milton	32.89	Separate and combined	2,561	4.6	11,780 ²	18,310 ²	1.43	12.59	64.3	11.4
Boston (Hyde Park)	43.63	Separate	3,444	8.25	28,410	28,700	1.96	4.57	99.0	42.9
Dedham	22.61	Separate	1,425	4.8	6,840	14,550 ³	1.09	9.40	47.0	11.6
Boston (Roxbury) ⁴	95.72	Separate and combined	7,664	7.0	56,160 ^{2,5}	74,000 ²	3.78	8.92	75.9	42.4
Boston (West Roxbury)	140.46	Separate	12,632	6.0	75,790	77,640	5.34	12.56	97.6	42.5
Quincy	36.64	Separate	1,563	4.2	6,560	12,530	2.08	9.89	52.4	21.0
Wellesley	14.95	Separate	483	4.0	1,930	11,720	—	12.50	16.5	5.7
Needham	—	Separate	—	—	—	5,820	0.71	17.84	—	—
Canton ⁶	29.13	Separate	2,044	6.0	12,260	15,540	1.25	10.16	78.9	12.3
Norwood	—	Separate	—	—	—	8,400	—	16.23	—	—
Stoughton ⁶	3.13	Separate	4 ⁹	—	1,280 ⁹	7,690	0.05	20.54	16.6	0.2
Walpole	—	Separate	—	—	—	17,100	—	13.44	—	—
Braintree ⁶	—	Separate	—	—	—	21,730	—	16.46	—	—
Weymouth ⁶	—	Separate	—	—	—	—	—	—	—	—
Totals	997.98	— — —	79,520	7.5	595,290	803,670	45.06	217.93	74.1	20.7

¹Estimated from Assessor's statement of the number of houses in each city or town on April 1, 1932, and the population from census of 1930.

²Parts of Dorchester, Milton, Roxbury and West Roxbury which are situated within the South Metropolitan Sewerage District limits are tributary at present to Boston main drainage works.

³Part of town not included in Metropolitan Sewerage District.

⁴At present connected with Boston main drainage system.

⁵Including connection with institution at Austin Farm, having an estimated population of 2,510.

⁶No Metropolitan trunk sewer has been completed to give these towns an outlet.

⁷Including connections with the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital authorized, by chapter 372 of the Acts of 1928 and chapter 373 of Acts of 1929, having an estimated population of 1,754.

⁸Includes 3.65 miles of trunk sewer built by Waltham for the joint use of Waltham, Watertown, Metropolitan State Hospital and Middlesex County Tuberculosis Hospital, authorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

⁹Manufacturing plants.

BOTH METROPOLITAN SEWERAGE SYSTEMS

Table showing Areas delivering Sewage to both Systems; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas. Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Population estimated as of December 31, 1932)

SYSTEMS	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute to Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
North Metropolitan	971.65	Separate and combined	112,398	6.4	714,020	766,320	Sq. Miles 39.92	Sq. Miles 100.32	Per Cent. 93.2	Per Cent. 39.8
South Metropolitan	997.98	Separate and combined	79,520	7.5	595,290	803,670	45.06	217.93	74.1	20.7
Totals	1,969.63	- - -	191,918	6.8	1,309,310	1,569,990	84.98	318.25	83.4	26.7

PUMPING STATIONS

Capacities and Results

NORTH METROPOLITAN SYSTEM

Deer Island Pumping Station

At this station are four submerged centrifugal pumps with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons, with 19-foot lift.

Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.

Average coal duty for the year: 54,700,000 foot pounds.

Average quantity raised each day: 82,400,000 gallons.

Maximum quantity raised per day: 151,700,000 gallons.

East Boston Pumping Station

At this station are four submerged centrifugal pumps, with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons with 19-foot lift.

Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.

Average coal duty for the year: 66,200,000 foot pounds.

Average quantity raised each day: 80,400,000 gallons.

Maximum quantity raised per day: 149,700,000 gallons.

Charlestown Pumping Station

At this station are three submerged centrifugal pumps, two of them having impeller wheels 7.5 feet in diameter, the other 8.25 feet in diameter. They are driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 60,000,000 gallons with 8-foot lift.

Contract capacity of 2 pumps: 22,000,000 gallons each, with 11-foot lift.

Average coal duty for the year: 54,900,000 foot pounds.

Average quantity raised each day: 41,700,000 gallons.

Maximum quantity raised per day: 70,000,000 gallons.

Alewife Brook Pumping Station

The pumping units in this station consist of one Andrews pump driven by a compound marine engine, one Morris pump and Morris compound engine and a specially designed engine of vertical cross-compound type having between the cylinders a centrifugal pump rotating on a horizontal axis.

Contract capacity of the Andrews pump: 4,500,000 gallons with 13-foot lift.

Contract capacity of Morris pump: 8,000,000 gallons with 15-foot lift.

Contract capacity of the special pump: 13,000,000 gallons with 13-foot lift.

Average coal duty for the year: 23,800,000 foot pounds.

Average quantity raised each day: 6,950,000 gallons.

Maximum quantity raised per day: 21,000,000 gallons.

Reading Pumping Station

At this station are two submerged centrifugal pumps, one of 2,500,000 gallons per 24 hours, and one of 4,000,000 gallons per 24 hours, capacity. These operate against a maximum head of 65 feet, and are actuated by vertical shafts directly connected with 75 and 100 horse-power motors. Alternating current of 440 volts furnished by the town of Reading is used.

Average quantity pumped per 24 hours: 1,185,000 gallons.

Maximum quantity raised per day: 3,750,000 gallons.

SOUTH METROPOLITAN SYSTEM

Ward Street Pumping Station

At this station are two vertical, triple-expansion pumping engines, of the Allis-Chalmers type, operating reciprocating pumps, the plungers of

44

P.D. 48

which are 48 inches in diameter with a 60-inch stroke and one 50,000,000-gallon centrifugal pumping unit actuated by a 500 H.P. Uniflow engine. Contract capacity of 3 pumps: 50,000,000 gallons each, with 45-foot lift. Average coal duty for the year: 83,300,000 foot pounds. Average quantity raised each day: 35,200,000 gallons. Maximum quantity raised per day: 67,100,000 gallons.

Quincy Pumping Station

The plant at this station consists of one compound condensing Deane duplex piston pumping unit and one Lawrence centrifugal pump driven by a Sturtevant compound condensing engine and one Morris centrifugal pump driven by a Morris compound condensing engine. Contract capacity of 3 pumps: Morris centrifugal, 10,000,000 gallons; Deane, 5,000,000 gallons; Lawrence centrifugal, 10,000,000 gallons. Average coal duty for the year: 35,300,000 foot pounds. Average quantity raised each day: 7,940,000 gallons. Maximum quantity raised per day: 18,310,000 gallons.

Nut Island Screen-house

The plant at this house includes two sets of screens in duplicate actuated by small reversing engines of the Fitchburg type. Two vertical Deane boilers, 80 horse-power each, operate the engines, provide heat and light for the house, burn materials intercepted at the screens, and furnish power for the Houghs' Neck pumping station. Average daily quantity of sewage passing screens: 68,400,000 gallons. Maximum quantity passing screens per day: 205,000,000 gallons.

Hough's Neck Pumping Station

At this station are two 6-inch submerged Lawrence centrifugal pumps with vertical shafts actuated by two Sturtevant direct-current motors. The labor and electric energy for this station are supplied from the Nut Island Screen-house, and as used at present it does not materially increase the amount of coal used at the latter station. Average quantity raised each day: 275,000 gallons. Maximum quantity raised per day: 527,000 gallons.

Squantum Pumping Station

At this station are two pumping units each consisting of a 10-inch submerged DeLaval centrifugal pump with vertical shaft actuated by a Crocker-Wheeler 60 HP motor. Each unit is capable of lifting 4,000,000 gallons of sewage per 24 hours against a head of 46 feet. The electric energy for this station is purchased from the Quincy Electric Light & Power Company. Average quantity raised each day: 77,200 gallons.

Average Daily Volume of Sewage lifted at Each of the Nine Metropolitan Sewerage Pumping Stations during the Year, as compared with the Corresponding Volumes for the Previous Year

PUMPING STATION	AVERAGE DAILY PUMPAGE			
	Jan. 1, 1932 to Dec. 31, 1932	Jan. 1, 1931 to Dec. 31, 1931	Increase during the Year	
	Gallons	Gallons	Gallons	Per Cent.
Deer Island	82,400,000	84,200,000	1,800,000*	2.14*
East Boston	80,400,000	82,200,000	1,800,000*	2.19*
Charlestown	41,700,000	47,200,000	5,500,000*	11.65*
Alewife Brook	6,950,000	7,070,000	120,000*	1.70*
Reading	1,185,000	985,000	200,000	20.30
Quincy	7,940,000	7,970,000	30,000*	0.38*
Ward Street (actual gallons pumped)	35,200,000	38,600,000	3,400,000*	8.81*
Hough's Neck	275,000	276,000	1,000*	0.36*
†Squantum	77,200	—	—	—

*Decrease.
†Pumping commenced Sept. 12, 1932.

METROPOLITAN SEWERAGE OUTFALLS

The Metropolitan Sewerage Districts now have outfalls in Boston Harbor at five points, two of which may discharge sewage from the North District and three from the South District.

During the year the sewage of the North District has been discharged wholly through the outlet located near Deer Island light. The other outfall of this system is closed by a cast-iron cover which can easily be removed.

Of the outfalls of the South District two extend for a distance exceeding one mile from the shore of Nut Island, Quincy, and the third one, called an emergency outlet, extends about 1,500 feet from the same. It was necessary to discharge sewage through this outfall 131 hours during the year.

During the year the average flow through the North Metropolitan District outfall at Deer Island has been 82,400,000 gallons of sewage per 24 hours, with a maximum rate of 151,700,000 gallons during a stormy period in November 1932. The amount of sewage discharged into the North Metropolitan District averaged 115 gallons per day for each person, taking the estimated population of the District contributing sewage. If the sewers in this District were restricted to the admission of sewage proper only, this per capita amount would be considerably decreased.

In the South Metropolitan District an average of 68,400,000 gallons of sewage per 24 hours has passed through the screens at the Nut Island Screen-house and has been discharged from the outfalls into the outer harbor. The maximum rate of discharge per day which occurred during a stormy period in November 1932 was 205,000,000 gallons. The discharge of sewage through these outfalls represents the amount of sewage contributed by the South Metropolitan District, which was at the rate of 115 gallons per day per person of the estimated number contributing sewage in the District.

MATERIAL INTERCEPTED AT THE SCREENS

The material removed from the sewage at the screens of the North Metropolitan Sewerage Stations, consisting of rags, paper and other floating materials, has during the year amounted to 1,872 cubic yards. This is equivalent to 1.68 cubic feet for each million gallons of sewage pumped at Deer Island.

The material removed from the sewage at the screens of the South Metropolitan Sewerage Stations amounted to 4,760 cubic yards, equal to 5.14 cubic feet per million gallons of sewage delivered at the outfall works at Nut Island.

Studies of sewage flows in the Metropolitan sewers and siphons indicate that they are free from deposit.

FREDERICK D. SMITH,

Director and Chief Engineer of Sewerage Division.

Boston, January 1, 1933.

FINANCIAL STATEMENT
of the
METROPOLITAN DISTRICT COMMISSION
FOR THE YEAR ENDING NOVEMBER 30, 1932

GENERAL

HEADQUARTERS BUILDING CONSTRUCTION FUND

Chapter 362, Acts of 1929	\$750,000.00
<i>Expenditures</i>	
Amounts charged to Nov. 30, 1932	730,494.86
Balance, Dec. 1, 1932	\$19,505.14

PARKS DIVISION
Construction

METROPOLITAN PARKS CONSTRUCTION FUND

Total amount authorized to Dec. 1, 1931	\$9,093,043.96
Receipts added before June 1, 1901	198,942.81
	\$9,291,986.77

<i>Expenditures</i>	
Charles River Reservation:	
Land	\$500.00
Legal:	
Services	\$38.46
Expenses	2.20
	40.66
	\$540.66
Amounts charged to Nov. 30, 1931	9,263,603.93
	9,264,144.59
Balance, Dec. 1, 1932	\$27,842.18

METROPOLITAN PARKS CONSTRUCTION FUND, SERIES II

Total amount authorized to Dec. 1, 1931	\$9,614,780.63
Receipts from sales, etc.	29,934.16
	\$9,644,714.79

<i>Expenditures</i>	
Dedham Parkway:	
Reverted	\$327.87
Furnace Brook Parkway:	
Reverted	5,451.97
	\$5,779.84
Amounts charged to Nov. 30, 1931	9,636,378.52
	9,642,158.36
Balance, Dec. 1, 1932	\$2,556.43

CHARLES RIVER BASIN CONSTRUCTION FUND

Total amount authorized to Dec. 1, 1931	\$4,500,000.00
Receipts to Dec. 1, 1931	9,368.91
	\$4,509,368.91

<i>Expenditures</i>	
Amounts charged to Nov. 30, 1932	4,472,922.22
Balance, Dec. 1, 1932	\$36,446.69

NORTHERN TRAFFIC ROUTE CONSTRUCTION FUND

Total amount authorized to Dec. 1, 1931	\$3,000,000.00
Receipts trans. from Northern Traffic Artery Betterment Assessments and Sales Fund	18,140.30
	\$3,018,140.30

<i>Expenditures</i>	
Land	\$10,300.00
Legal:	
Services	\$476.03
Expenses	7.52
	483.55
	\$10,783.55
Amounts charged to Nov. 30, 1931	2,942,076.52
	2,952,860.07
Balance, Dec. 1, 1932	\$65,280.23

NEWTON-WELLESLEY BRIDGE CONSTRUCTION FUND

Total amount authorized to Dec. 1, 1931	.	.	.	.	.	.	.	.	\$50,000.00
Receipts:									
For the year ending Nov. 30, 1932.	.	.	.	.	.	.	.	\$13.00	
For the period prior to Dec. 1, 1931	.	.	.	.	.	.	.	1,733.29	
								<u>1,746.29</u>	
									\$51,746.29
									<i>Expenditures</i>
Amounts charged to Nov. 30, 1932	.	.	.	.	.	.	.	.	50,000.00
									<u>\$1,746.29</u>
Balance, Dec. 1, 1932	.	.	.	.	.	.	.	.	\$1,746.29
CHARLES RIVER BASIN IMPROVEMENTS									
Chapter 371, Acts of 1929	.	.	.	.	.	.	.	.	\$2,305,000.00
Less Chapter 179, Acts of 1931	.	.	.	.	.	.	.	.	25,000.00
									<u>\$2,280,000.00</u>
									<i>Expenditures</i>
Dam to Cottage Farm Bridge:									
Construction:									
Contracts:									
Bay State Dredging and Contracting Co.	.							\$4,958.06	
Trimount Dredging Co.	.							257,636.32	
								<u>\$262,594.38</u>	
Labor and materials	.	.	.	.	.	.	.	7,132.56	
								<u>\$269,726.94</u>	
Engineering:									
Services	.	.	.	.	.	.	.	\$17,086.90	
Expenses	.	.	.	.	.	.	.	185.09	
								<u>17,271.99</u>	
Land	.	.	.	.	.	.	.	2,810.75	
Legal:									
Services	.	.	.	.	.	.	.	\$204.19	
Expenses	.	.	.	.	.	.	.	35.80	
								<u>239.99</u>	
Architect services	.	.	.	.	.	.	.	1,807.69	
Appraising	.	.	.	.	.	.	.	400.00	
Advertising	.	.	.	.	.	.	.	100.00	
Barge	.	.	.	.	.	.	.	850.00	
Borings	.	.	.	.	.	.	.	247.33	
Miscellaneous	.	.	.	.	.	.	.	1.22	
								<u>\$293,455.91</u>	
Nonantum Road Extension:									
Construction:									
Contract, Thomas J. McCue	.	.						\$11,458.17	
Labor and materials	.	.	.	.	.	.	.	109.70	
								<u>\$11,567.87</u>	
Engineering:									
Services	.	.	.	.	.	.	.	\$1,516.85	
Expenses	.	.	.	.	.	.	.	93.67	
								<u>1,610.52</u>	
Land	.	.	.	.	.	.	.	51,550.00	
Legal:									
Services	.	.	.	.	.	.	.	\$73.93	
Expenses	.	.	.	.	.	.	.	23.75	
								<u>97.68</u>	
									64,826.07
Underpass, Memorial Drive:									
Construction:									
Contract, Coleman Bros.	.	.	.	.	.	.	.	\$86,128.81	
Labor and materials	.	.	.	.	.	.	.	3,830.79	
								<u>\$89,959.60</u>	
Engineering:									
Services	.	.	.	.	.	.	.	\$1,979.15	
Expenses	.	.	.	.	.	.	.	75.86	
								<u>2,055.01</u>	
Legal services	.	.	.	.	.	.	.	12.35	
Bronze tablet	.	.	.	.	.	.	.	268.20	
								<u>92,295.16</u>	
Abattoir:									
Engineering:									
Services	.	.	.	.	.	.	.	\$3,539.81	
Expenses	.	.	.	.	.	.	.	71.87	
								<u>\$3,611.68</u>	
Land	.	.	.	.	.	.	.	61,738.60	
Legal:									
Services	.	.	.	.	.	.	.	\$215.12	
Expenses	.	.	.	.	.	.	.	28.21	
								<u>243.33</u>	
Appraising	.	.	.	.	.	.	.	1,682.50	
Borings	.	.	.	.	.	.	.	35.09	
								<u>67,311.20</u>	
General:									
Engineering services	.	.	.	.	.	.	.	38.22	
								<u>\$517,926.56</u>	
Amounts charged to Nov. 30, 1931	.	.	.	.	.	.	.	401,451.00	
								<u>919,377.56</u>	
Balance, Dec. 1, 1932	.	.	.	.	.	.	.	.	\$1,360,622.44

Miscellaneous

METROPOLITAN PARKS EXPENSE FUND

Receipts, Dec. 1, 1931 to Nov. 30, 1932:

Bath Houses:

Revere Beach:

Sale of tickets	.	.	.	.	.	\$15,890.90
Privileges	.	.	.	.	.	320.00
Miscellaneous	.	.	.	.	.	23.33
						<u>\$16,234.23</u>

Nantasket Beach:

Sale of tickets	.	.	.	.	\$20,950.15	
Privileges	.	.	.	.	100.00	
Steam furnished	.	.	.	.	57.87	
Miscellaneous	.	.	.	.	5.25	
					<hr/>	21,113.27

Nahant Beach:

Sale of tickets	.	.	.	.	.	\$5,625.10	
Privileges	.	.	.	.	.	86.00	
						<u> </u>	5,711.10

Magazine Beach:

Sale of tickets	.	.	.	.	\$622.40	
Privileges	.	.	.	.	26.00	
					<u> </u>	648.40

Blue Hills:

Sale of tickets	.	.	.	.	.	\$398.00	
Miscellaneous	.	.	.	.	.	1.00	
						<u> </u>	399.00

\$44,106.00

Rentals:

Buildings	.	.	.	.	.	.	.	\$36,230.00
Houses	.	.	.	.	.	.	.	1,909.96
Ducts	.	.	.	.	.	.	.	3,030.68
Land	.	.	.	.	.	.	.	3,537.00
Locations	.	.	.	.	.	.	.	130.00
								44,837.64

Sales:

Land	\$25.00	
Wood	744.54	
Grass	125.00	
Miscellaneous	479.54	
		1,374.08

Court fines	19,337.00
Interest on investments	1,412.50
Interest on average daily balance	749.39
Privileges	7,298.63
Golf privileges	29,482.65
Sidewalk and entrance construction	3,178.58
Boat hire	989.75
Damage to property	956.91
Reimbursement for resurfacing	1,016.60
Forfeited deposits on plans and specifications	124.00
Settlement of claims for injuries (police)	3,744.00
Reels returned	302.53
Miscellaneous	265.21

\$159,175.47

3,889,514.15

\$4,048,689.62

Expenditures, Dec. 1, 1931 to Nov. 30, 1932:

General Expense:

Advertising	.	.	.	.	.	.	\$97.95	
Damage to property	.	.	.	.	.	.	14.29	
							<u> </u>	\$112.24

Police:

Settlement of claims for injuries	.	.	.	.	.	\$3,744.00	
Damage to property	10.53	
						<u> </u>	3,754.53

Blue Hills Reservation:

Blue Hills Golf Course:

Land	\$13,696.14
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Legal:

Services	\$305.98
Expenses	49.89

Expenses:				19.89	
				<u>355.87</u>	
Appraising	100.00
Architect services. . . . .	.	.	.	.	1,251.34
Other services . . . . .	.	.	.	.	192.00
Miscellaneous supplies and expenses . . . . .	.	.	.	.	11,815.89
				<u> </u>	<u>\$27,411.24</u>

							\$29,768.77	
Repairs to houses	.	.	.	.	.	.	2,717.91	
Architect services	.	.	.	.	.	.	121.92	
Bath house expenses	.	.	.	.	.	.	155.89	
Repairs to boat	.	.	.	.	.	.	31.19	
Miscellaneous	30.62	
							30,468.77	

Stony Brook Reservation:

Repairs to houses	99.10
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Metropolitan Parks Expense Fund — Continued

Expenditures, Dec. 1, 1931 to Nov. 30, 1932 (Continued)

Quincy Shore Reservation:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$812.49	
Refund	.	.	.	.	.	.	.	150.00	
									\$962.49

Miscellaneous 15.25

\$977.74

Blue Hills Parkway:

Drainage:

Construction:

Labor and materials \$1,719.01

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$454.96	
Refund	.	.	.	.	.	.	.	63.63	
									518.59

2,237.60

Neponset River Parkway:

Sidewalk and entrance construction:

Cost 190.09

Furnace Brook Parkway:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$179.92	
Refund	.	.	.	.	.	.	.	20.08	
									200.00

Old Colony Parkway:

Damage to Neponset River Bridge 187.90

Middlesex Fells Reservation;

Land \$10,000.00

Legal:

Services \$227.99

Expenses 7.50

Repairs to houses 235.49

Shrubs 838.27

Damage to property 347.89

Architect services 47.86

Miscellaneous 500.42

11,982.45

Middlesex Fells Parkway:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$7.87	
Refund	.	.	.	.	.	.	.	158.11	
									\$165.98

Damage to Wellington Bridge 193.77

359.75

Mystic Valley Parkway:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$574.99	
Refund	.	.	.	.	.	.	.	63.15	
									\$638.14

Miscellaneous 7.59

645.73

Lynn Fells Parkway:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$162.72	
Refund	.	.	.	.	.	.	.	211.49	
									374.21

Alewife Brook Parkway:

Sidewalk and entrance construction:

Refund	.	.	.	.	.	.	.	\$368.90	
Architect services	.	.	.	.	.	.	.	723.66	
									1,092.56

Revere Beach Reservation:

Damage to property \$126.29

Bath house:

Payrolls \$25,895.95

Miscellaneous supplies and expenses 6,811.27

32,707.22

32,833.51

Winthrop Shore Reservation:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$45.78	
Refund	.	.	.	.	.	.	.	13.77	
									59.55

Revere Beach Parkway:

Sidewalk and entrance construction:

Cost	.	.	.	.	.	.	.	\$91.61	
Refund	.	.	.	.	.	.	.	91.95	
									183.56

Land 1,250.00

Legal:

Services \$28.93

Expenses 2.03

30.96

1,464.52

Metropolitan Parks Expense Fund — Continued

Expenditures, Dec. 1, 1931 to Nov. 30, 1932 — Continued
Nahant Beach Parkway:

Bath house:					
Payrolls				\$8,188.75	
Miscellaneous supplies and expenses	.	.	.	1,176.91	
					\$9,365.66

Charles River Upper Division:					
Damage to property	.	.	.	\$82.37	
Repairs to houses	.	.	.	20.23	
Filling	.	.	.	264.60	
Float near Watertown Bridge	.	.	.	398.70	
Architect services	.	.	.	20.83	
Riverside Public Golf Links:					
Miscellaneous supplies and expenses	.	.	.	17,654.88	
					18,441.61

Charles River Basin:					
Repairs to locks and gates	.	.	.	\$3,245.38	
Band stand construction	.	.	.	1,797.03	
Architect services	.	.	.	25.50	
Magazine Beach Bath House:					
Payrolls	.	.	.	\$2,751.24	
Miscellaneous supplies and expenses	.	.	.	456.80	
				3,208.04	
					8,275.95

Cambridge Parkway:					
Sidewalk and entrance construction:					
Cost	.	.	.	\$152.12	
Refund	.	.	.	59.88	
				\$212.00	
Credit on account of filling	.	.	.	6,301.75	
					-\$6,089.75

Nantasket Beach Reservation:					
Repairs to buildings	.	.	.	\$4,258.72	
Bath house:					
Payrolls	.	.	.	\$16,088.42	
Miscellaneous supplies and expenses	.	.	.	3,053.30	
				19,141.72	
					23,400.44

Expenditures, prior to Dec. 1, 1931	.	.	.	.	\$140,434.16
					3,759,329.72
					\$3,899,763.88
Balance, Dec. 1, 1932	.	.	.	.	\$148,925.74

METROPOLITAN PARKS TRUST FUND

Receipts:					
For the year ending Nov. 30, 1932	.	.	.	\$147.69	
For the period prior to Dec. 1, 1931	.	.	.	41,480.14	
					\$41,627.83
Expenditures:					
For the year ending Nov. 30, 1932	.	.	.	-	
For the period prior to Dec. 1, 1931	.	.	.	\$38,140.11	
					38,140.11
Balance, Dec. 1, 1932	.	.	.		\$3,487.72

METROPOLITAN DISTRICT UNEMPLOYMENT RELIEF

Receipts:					
For the year ending Nov. 30, 1932	.	.	.	\$9,680.75	
For the period prior to Dec. 1, 1931	.	.	.	-	
					\$9,680.75
Expenditures:					
For the year ending Nov. 30, 1932	.	.	.	\$9,674.19	
For the period prior to Dec. 1, 1931	.	.	.	-	
					9,674.19
Balance, Dec. 1, 1932	.	.	.		\$6.56

EDWIN U. CURTIS MEMORIAL TRUST FUND

Receipts:					
For the year ending Nov. 30, 1932	.	.	.	\$63.50	
For the period prior to Dec. 1, 1931	.	.	.	1,662.87	
					\$1,726.37
Expenditures:					
For the year ending Nov. 30, 1932	.	.	.	-	
For the period prior to Dec. 1, 1931	.	.	.	\$237.59	
					237.59
Balance, Dec. 1, 1932	.	.	.		\$1,488.78

JOHN W. WEEKS BRIDGE TRUST FUND

Receipts:					
For the year ending Nov. 30, 1932	.	.	.	-	
For the period prior to Dec. 1, 1931	.	.	.	\$235,618.81	
					\$235,618.81

Metropolitan Parks Expense Funds — Continued

Expenditures:			
For the year ending Nov. 30, 1932.	\$330.91		
For the period prior to Dec. 1, 1931	235,287.90		
			\$235,618.81

GENERAL REVENUE, BUNKER HILL MONUMENT

Receipts:			
For the year ending Nov. 30, 1932.	\$3,241.50		
For the period prior to Dec. 1, 1931	43,283.00		
			\$46,524.50

BLUE HILLS GOLF COURSE — INCOME

Receipts:			
For the year ending Nov. 30, 1932.	\$12,358.70		
For the period prior to Dec. 1, 1931	-		
			\$12,358.70

Expenditures:			
For the year ending Nov. 30, 1932.	\$320.00		
For the period prior to Dec. 1, 1931	-		
			320.00

Balance, Dec. 1, 1932			\$12,038.70
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Maintenance

METROPOLITAN PARKS MAINTENANCE FUND, GENERAL

Appropriation (Chapter 170, Acts of 1932).	\$872,030.00	
“(Chapter 307, Acts of 1932).	2,500.00	
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	5,684.79	
		\$880,214.79

Expenditures		
Police	\$262,807.18	
Pensions and annuities	27,895.33	
Retirement payments	6,382.21	
Deficiency appropriation	83.18	

Administration:		
Salaries:		
Commissioners	\$2,491.26	
Secretary and clerks	9,480.93	
Janitors and cleaners	4,896.04	
	\$16,868.23	
Rent, care and lighting of building	3,608.44	
Stationery, office supplies and expenses	2,556.25	
Printing	181.52	
	23,214.44	

Engineering:		
Salaries:		
Chief engineer and assistants.	\$28,000.23	
Supplies and miscellaneous expenses:		
General	\$1,622.49	
Auto expenses	965.65	
	2,588.14	
	30,588.37	

Blue Hills Division:		
Labor and teaming:		
General	\$80,057.17	
Moth work	31,077.39	
Road repairs	1,743.58	
	\$112,878.14	
Street lighting.	2,883.08	
Supplies and miscellaneous expenses:		
General	\$19,204.92	
Moth work	332.67	
Road repairs	891.48	
	20,429.07	
	136,190.29	

Middlesex Fells Division:		
Labor and teaming:		
General	\$65,876.77	
Moth work	24,244.49	
Road repairs	574.18	
	\$90,695.44	
Supplies and miscellaneous expenses:		
General	\$21,638.70	
Moth work	312.82	
Road repairs	109.51	
	22,061.03	
	112,756.47	

Revere Beach Division:		
Labor and teaming:		
General	\$58,187.22	
Moth work	32.04	
Road repairs	477.31	
	\$58,696.57	
Street lighting.	12,909.07	

Metropolitan Parks Maintenance Fund, General — Continued

Supplies and miscellaneous expenses:			
General	.	.	\$19,792.26
Road repairs	.	.	451.41
			<u>\$20,243.67</u>
			\$91,849.31
Charles River Upper Division:			
Labor and teaming:			
General	.	.	\$45,809.83
Moth work	.	.	9,194.41
Road repairs	.	.	1,948.25
			<u>\$56,952.49</u>
Street lighting	.	.	10,166.65
Supplies and miscellaneous expenses:			
General	.	.	\$26,257.56
Moth work	.	.	53.09
Road repairs	.	.	747.59
			<u>27,058.24</u>
			94,177.38
Charles River Lower Basin:			
Labor and teaming:			
General	.	.	\$38,172.19
Moth work	.	.	246.00
Road repairs	.	.	189.46
			<u>\$38,607.65</u>
Street lighting	.	.	11,905.29
Supplies and miscellaneous expenses:			
General	.	.	\$10,586.59
Road repairs	.	.	229.64
			<u>10,816.23</u>
			61,329.17
Engineering Department:			
Bridge repairs:			
Labor:			
Blue Hills Division	.	.	\$2,522.13
Middlesex Fells Division	.	.	1,722.60
Charles River Lower Basin	.	.	334.05
			<u>\$4,578.78</u>
Supplies:			
Blue Hills Division	.	.	\$288.50
Middlesex Fells Division	.	.	375.72
Charles River Lower Basin	.	.	12.65
			<u>676.87</u>
			\$5,255.65
Dredging Hyde Brook near Galen Street Bridge	.	.	2,192.58
			<u>7,448.23</u>
Damages, James Travernese (Chapter 22, Resolves of 1932)	.	.	1,000.00
Damages, Jacqueline O'Neill (Chapter 41, Resolves of 1932)	.	.	2,500.00
			<u>\$858,221.56</u>
Balance, Dec. 1, 1932	.	.	\$21,993.23

METROPOLITAN PARKS MAINTENANCE FUND, SPECIALS

BAND CONCERTS			
Appropriation (Chapter 170, Acts of 1932)	.	.	\$20,000.00
Expenditures			
Advertising	.	.	\$65.10
Bands:			
Blue Hills Division	.	.	\$2,985.00
Middlesex Fells Division	.	.	2,184.50
Revere Beach Division	.	.	3,742.50
Charles River Upper Division	.	.	2,683.76
Nantasket Beach Division	.	.	7,992.50
Bunker Hill	.	.	192.50
			<u>19,780.76</u>
Miscellaneous	.	.	9.65
			<u>19,855.51</u>
			*\$144.49
BRUSH CUTTING, CLEARING, ETC.			
Appropriation (Chapter 1, Acts of 1931)	.	.	\$100,000.00
" (Chapter 14, Acts of 1931)	.	.	50,000.00
" (Chapter 465, Acts of 1931)	.	.	80,000.00
			<u>\$230,000.00</u>
Expended to Nov. 30, 1931	.	.	159,834.19
			<u>\$70,165.81</u>
Expenditures			
Labor:			
Blue Hill Division	.	.	\$21,067.00
Middlesex Fells Division	.	.	21,064.81
Revere Beach Division	.	.	2,296.00
Charles River Upper Division	.	.	22,040.00
Charles River Lower Basin	.	.	3,364.00
General Expense	.	.	334.00
			<u>70,165.81</u>

*Reverted

Metropolitan Parks Maintenance Fund, Specials — Continued

BRUSH CUTTING, CLEARING, ETC.

Appropriation (Chapter 69, Acts of 1932) \$100,000.00

Expenditures

Labor:

Blue Hills Division	\$32,444.00	
Middlesex Fells Division	28,250.00	
Revere Beach Division	6,906.00	
Charles River Upper Division	23,000.00	
Charles River Lower Basin	6,000.00	
Nantasket Beach Division	3,000.00	
General Expense	400.00	
		<u>100,000.00</u>

MOSQUITO CONTROL IN RESERVATIONS

Appropriation (Chapter 245, Acts of 1931). \$10,000.00
 Expended to Nov. 30, 1931 6,059.54

Expenditures

Labor and materials:

Charles River Upper Division 3,940.46

REPAIRING DAMAGES, SHORE WALLS, ETC.

Appropriation (Chapter 189, Acts of 1931). \$185,000.00
 Expended to Nov. 30, 1931 88,372.42

Expenditures

Construction:

Contracts:

M. McDonough Co.	\$40,098.79	
M. McDonough Co.	1,591.07	
Simpson Bros. Corp.	5,360.59	
		<u>\$47,050.45</u>

Labor and materials	16,300.27	
		<u>\$63,350.72</u>

Engineering:

Services	\$1,957.49	
Expenses	345.49	
		<u>2,302.98</u>

Advertising	11.00	
		<u>65,664.70</u>

Balance, Dec. 1, 1932 \$30,962.88

STREAM GAUGING

Appropriation (Chapter 245, Acts of 1931) \$1,350.00
 Expended to Nov. 30, 1931 1,040.86

\$309.14

Expenditures

Charles River Upper Division:

Labor and materials \$150.11

*\$159.03

STREAM GAUGING

Appropriation (Chapter 170, Acts of 1932). \$300.00

Expenditures

Charles River Upper Division:

Labor and materials 24.89

Balance, Dec. 1, 1932 \$275.11

POLICE STATION, REVERE BEACH

Appropriation (Chapter 245, Acts of 1931). \$40,000.00
 Expended to Nov. 30, 1931 10,162.58

\$29,837.42

Expenditures

Construction:

Contract, Allan A. Gillis Construction Co.	\$16,138.41	
Labor and materials	180.99	
		<u>\$16,319.40</u>

Engineering services	7.35	
Architect services	1,088.86	
		<u>17,415.61</u>

Balance, Dec. 1, 1932 \$12,421.81

*Reverted

Metropolitan Parks Maintenance Fund, Boulevards — Concluded

Middlesex Fells Division:

Labor and teaming:

General	\$70,924 62	
Moth work	1,806 59	
Road repairs	3,579 92	
	<hr/>	\$76,311 13

Street lighting. 34,485 89

Supplies and miscellaneous expenses:

General	\$20,803 72	
Moth work	61 95	
Road repairs	4,747 19	
	<hr/>	25,612 86

\$136,409 88

Revere Beach Division:

Labor and teaming:

General	\$49,544 44	
Moth work	265 25	
Road repairs	1,373 31	
	<hr/>	\$51,183 00

Street lighting. 16,023 71

Supplies and miscellaneous expenses:

General	\$10,872 51	
Road repairs	1,691 18	
	<hr/>	12,563 69

79,770 40

Charles River Upper Division:

Labor and teaming:

General	\$450 00	
Moth work	2,550 00	
	<hr/>	\$3,000 00

Supplies and miscellaneous expenses:

General	207 53	
	<hr/>	3,207 53

Charles River Lower Basin:

Labor and teaming:

General	\$10,961 57	
Moth work	126 00	
Road repairs	390 75	
Traffic lights	7,576 40	
	<hr/>	\$19,054 72

Street lighting. 3,991 66

Supplies and miscellaneous expenses:

General	\$1,550 44	
Road repairs	643 24	
	<hr/>	2,193 68

25,240 06

Engineering Department:

Bridge repairs:

Labor:

Blue Hills Division	\$5,957 13	
Middlesex Fells Division	2,402 45	
Revere Beach Division	18,323 94	
Chas. River Lower Basin	5,550 68	
	<hr/>	\$32,234 20

Supplies and miscellaneous expenses:

Blue Hills Division	\$1,259 10	
Middlesex Fells Division	874 51	
Revere Beach Division	9,308 91	
Chas. River Lower Basin	890 57	
	<hr/>	12,333 09

\$44,567 29

Dredging Alewife Brook 713 46

45,280 75

\$534,290 63

Balance, Dec. 1, 1932 \$71,911 00

METROPOLITAN PARKS MAINTENANCE FUND, BOULEVARDS, SPECIALS

ELECTRIC LIGHTING SYSTEM

Balance of Chapters 146 and 386, Acts of 1929 \$5,268 41

Expenditures

Installation of conduits, etc.:

Labor and materials \$321 93

Engineering:

Services	\$320 40	
Expenses	77 00	
	<hr/>	397 40

719 33

Balance, Dec. 1, 1932 \$4,549 08

EXTENSION OF QUINCY SHORE RESERVATION

Appropriation (Chapter 343, Acts of 1927 Reappropriated by Chapter 386, Acts of 1929) \$35,000 00

Expended to Nov. 30, 1931 33,044 31

\$1,955 69

Extension of Quincy Shore Reservation—Concluded

Expenditures

										<i>Expenditures</i>	
Construction:											
Labor and materials	.	.	.	.	.	.	.	.	.	\$344	13
Engineering expenses	.	.	.	.	.	.	.	.	.	2	64
Legal services	.	.	.	.	.	.	.	.	.	14	10
										<hr/>	
										360 87	
Balance, Dec. 1, 1932	.	.	.	.	.	.	.	.	.	\$1,594	82
										<hr/>	

LAND FOR BOULEVARD ALONG CHARLES RIVER

LAND FOR BOULEVARD ALONG CHARLES RIVER															
Appropriation (Chapter 343, Acts of 1927)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	\$80,000 00
" (Chapter 127, Acts of 1928)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100,000 00
" (Chapter 146, Acts of 1929)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	200,000 00
															\$380,000 00
Expended to Nov. 30, 1932	.	.	.	.	.	.	.	.	.	.	.	.	.	.	329,297 19
Balance, Dec. 1, 1932	.	.	.	.	.	.	.	.	.	.	.	.	.	.	\$50,702 81

LAND AND FILLING, BROOKLINE—NEWTON BOULEVARD

Appropriation (Chapter 358, Acts of 1929)	.	.	.	.	.	.	.	\$50,000	00
" (Chapter 386, Acts of 1929)	.	.	.	.	.	.	.	25,000	00
								\$75,000	00
Expended to Nov. 30, 1931	.	.	.	.	.	.	.	56,808	42
								\$18,191	58

Expenditures

[illegible]

RECONSTRUCTION FELLSWAY, FOREST AND MAIN STREETS

Appropriation (Chapter 426, Acts of 1930).	.	.	.	.	.	.	.	\$260,000	00
Expended to Nov. 30, 1931	.	.	.	.	.	.	.	253,908	44
								\$6,091	56

Expenditures

							Expenses
Construction:							
Contract, C. & R. Construction Co.	.	.	.	.	.	.	\$5,631 65
Labor and materials	.	.	.	.	.	.	452 81
							<u>6,084 46</u>
							<u>\$7 10*</u>

LAND, BOULEVARD, NEWBURYPORT TURNPIKE TO LYNN WOODS PARKWAY

Appropriation (Chapter 426, Acts of 1930).	\$10,000 00
--	-------------

Expenditures

[illegible]

REPAIRING DAMAGES

[illegible]

WORK OF PREVIOUS YEARS

Appropriation (Chapter 460, Acts of 1931).	.	.	.	.	.	.	.	.	\$11,700	00
Expended to Nov. 30, 1931	.	.	.	.	.	.	.	.	6,889	37
									\$4,800	63

Expenditures

Extension of Quincy Shore Reservation:						
Land . . . . .	.	.	.	.	.	\$4,250 00
Legal services . . . . .	.	.	.	.	.	38 72
						4,288 72
Balance, Dec. 1, 1932 . . . . .	.	.	.	.	.	\$511 91

*Reverted.

Metropolitan Parks Maintenance Fund, Boulevards, Specials — Continued

RESURFACING REEDSDALE AND BROOK ROADS, MILTON

Appropriation (Chapter 460, Acts of 1931).	\$88,513 12
Expended to Nov. 30, 1931	56,799 01
	<hr/>
	\$31,714 11

Expenditures

Construction:		
Contract, Coleman Bros., Inc.	\$14,445 45	
Labor and materials	94 27	
	<hr/>	\$14,539 72
Engineering:		
Services	\$45 70	
Expenses	24 00	
	<hr/>	69 70
Advertising		11 55
		<hr/>
		14,620 97
Balance, Dec. 1, 1932		<hr/>
		\$17,093 14

RECONSTRUCTION ALEWIFE BROOK PARKWAY

Appropriation (Chapter 460, Acts of 1931).	\$100,000 00
Expended to Nov. 30, 1931	82,454 24
	<hr/>
	\$17,545 76

Expenditures

Construction:		
Contract, Simpson Bros. Corporation	\$13,187 79	
Labor and materials	349 63	
	<hr/>	\$13,537 42
Engineering:		
Services	\$33 30	
Expenses	65 80	
	<hr/>	99 10
Legal services		20 71
		<hr/>
		13,657 23
Balance, Dec. 1, 1932		<hr/>
		\$3,888 53

CIRCUMFERENTIAL HIGHWAY

Appropriation (Chapter 398, Acts of 1926).	\$115,000 00
" (Chapter 386, Acts of 1929)	159,000 00
" (Chapter 115, Acts of 1930).	371,000 00
" (Chapter 460, Acts of 1931).	28,947 37
" (Chapter 170, Acts of 1932).	21,052 63
	<hr/>
	\$695,000 00
Expended to Nov. 30, 1931	548,233 36
	<hr/>
	\$146,766 64

Expenditures

Lynn Fells Parkway:		
Land	\$4,205 00	
Legal:		
Services	\$35 93	
Expenses	3 61	
	<hr/>	39 54
Appraising		75 00
Adjustment on account of filling		6,301 75
		<hr/>
		\$10,621 29
Lynn Fells Parkway Extension:		
Engineering:		
Services	\$1,057 70	
Expenses	60 40	
	<hr/>	1,118 10
Fellsway East Extension:		
Construction:		
Contract, C. M. Callahan, Inc.	\$30,319 36	
Labor and materials	5,014 34	
	<hr/>	\$35,333 70
Engineering:		
Services	\$313 30	
Expenses	198 15	
	<hr/>	511 45
Land		900 00
Legal:		
Services	\$43 25	
Expenses	11 50	
	<hr/>	54 75
Miscellaneous		35
		<hr/>
		36,800 25
East Milton Street:		
Construction:		
Contract, Thomas J. McCue	\$6,350 70	
Engineering services.	51 37	
Land		1,700 00
Legal:		
Services	\$9 02	
Expenses	1 00	
	<hr/>	10 02
		<hr/>
		8,112 09

Metropolitan Parks Maintenance Fund, Boulevards, Specials — Continued

Resurfacing Boulevards and Parkways — Continued

Expenditures

Blue Hills Division:

Construction:

Contracts:

University Contracting Company	\$3,647 22
A. G. Tomasello and Son	18,118 32
A. DeStefano and Son, Inc.	5,728 04
Coleman Bros., Inc.	10,706 03
Coleman Bros., Inc.	7,094 21
J. Susi and Brother	15,269 09
C. and R. Construction Co.	22,081 82

\$82,644 73

Labor and materials 8,020 88

\$90,665 61

Engineering:

Services	\$7,994 59
Expenses	740 52

8,735 11

Advertising 251 35

\$99,652 07

Middlesex Fells Divison:

Construction:

Contracts:

C. & R. Construction Co.	\$41,629 68
C. & R. Construction Co.	2,695 43

\$44,325 11

Labor and materials 4,220 24

\$48,545 35

Engineering:

Services	\$4,458 90
Expenses	172 32

4,631 22

Advertising 125 85

53,302 42

Revere Beach Division:

Construction:

Contracts:

J. J. Collins	\$791 14
M. McDonough Co.	9,018 17
Simpson Bros. Corporation.	34,591 29

\$44,400 60

Labor and materials 976 15

\$45,376 75

Engineering:

Services	\$4,715 45
Expenses	276 33

4,991 78

Advertising 119 25

50,487 78

Charles River Upper Division:

Construction:

Contract, M. McDonough Company	\$8,055 93
Labor and materials	1,401 46

\$9,457 39

Engineering:

Services	\$2,229 52
Expenses	14 37

2,243 89

Advertising 109 50

11,810 78

Charles River Lower Basin:

Construction:

Contracts:

John McCourt Company	\$23,856 68
Simpson Bros. Corp.	24,565 45

\$48,422 13

Labor and materials 2,850 70

\$51,272 83

Engineering:

Services	\$3,413 45
Expenses	47 32

3,460 77

Advertising 70 70

54,804 30

Nantasket Beach Division:

Engineering:

Services	\$87 50
Expenses	36 05

123 55

\$270,180 90

Balance, Dec. 1, 1932

\$52,502 27

Metropolitan Parks Maintenance Fund, Boulevards, Specials — Continued

RECONSTRUCTION NANTASKET BEACH ROADWAY

Appropriation (Chapter 307, Acts of 1932).	.	.	.	.	.	.	.	\$60,000.00
	<i>Expenditures</i>							
Construction:								
Contract, M. McDonough Company	.	.	.	.	\$36,938	03		
Labor and materials	.	.	.	.	818	69		
							\$37,756	72
Engineering:								
Services	.	.	.	.	\$1,948	40		
Expenses	.	.	.	.	128	80		
							2,077	20
Advertising	.	.	.	.	.	.	64	15
								39,898 07
Balance, Dec. 1, 1932	.	.	.	.	.	.	.	\$20,101 93

TRAFFIC CIRCLE, FELLSWAY WEST

[illegible]

BRUSH CUTTING, NEWBURYPORT TURNPIKE TO LYNN WOODS PARKWAY

[illegible]

CHARLES RIVER BASIN MAINTENANCE

Appropriation (Chapter 170, Acts of 1932).		\$204,160 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books		5,078 43
		<hr/>
		\$209,238 43
	<i>Expenditures</i>	
Park and Water Areas:		
Police	\$77,789 43	
Labor:		
General	\$39,892 69	
Moth work	330 00	
Road repairs	10 00	
	<hr/>	40,232 69
Street lighting.		6,106 80
Supplies and miscellaneous expenses:		
General	8,385 74	
	<hr/>	\$132,514 66
Locks, Gates and Drawbridges:		
Labor:		
General	\$53,491 69	
Bridge repairs	7,433 77	
	<hr/>	\$60,925 46
Supplies and miscellaneous expenses:		
General	\$8,868 07	
Bridge repairs	1,408 15	
	<hr/>	10,276 22
		71,201 68
Retirement payments		1,446 63
Deficiency appropriation		259 31
		<hr/>
		205,422 28
Balance, Dec. 1, 1932		\$3,816 15

NANTASKET BEACH MAINTENANCE

Appropriation (Chapter 170, Acts of 1932).	\$86,000 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	1,210 10
	<u>\$87,210 10</u>
<i>Expenditures</i>	
Police	\$29,910 53
General labor	37,244 98
Street lighting	1,609 86
Supplies and miscellaneous expenses	16,627 63
	<u>85,393 00</u>
Balance, Dec. 1, 1932	\$1,817 10

WELLINGTON BRIDGE MAINTENANCE

Appropriation (Chapter 170, Acts of 1932).	\$20,900 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	10 04
	<u>\$20,910 04</u>
<i>Expenditures</i>	
Labor:	
General	\$9,174 85
Bridge repairs	7,954 11
	<u>\$17,128 96</u>
Supplies and miscellaneous expenses:	
General	\$299 82
Bridge repairs	2,470 87
	<u>2,770 69</u>
Retirement payments	201 03
	<u>20,100 68</u>
Balance, Dec. 1, 1932	\$809 36

BUNKER HILL MAINTENANCE

Appropriation (Chapter 170, Acts of 1932).	\$11,500 00
<i>Expenditures</i>	
Police	\$4,372 14
General labor	5,138 21
Flood lighting	267 68
Supplies and miscellaneous expenses	988 00
	<u>10,766 03</u>
Balance, Dec. 1, 1932	\$733 97

BUNKER HILL MAINTENANCE, SPECIALS

<i>STEPS AND WALKS</i>	
Appropriation (Chapter 115, Acts of 1930).	\$10,000 00
" (Chapter 245, Acts of 1931)	10,000 00
	<u>\$20,000 00</u>
Expended to Nov. 30, 1931	9,872 25
	<u>\$10,127 75</u>
<i>Expenditures</i>	
Construction:	
Contract M. McDonough Company	\$9,798 13
Labor and materials	108 10
	<u>9,906 23</u>
	<u>*\$221 52</u>

Analysis of 1932 Receipts

Credited to:	
Charles River Basin Maintenance Fund	\$256 44
Metropolitan Parks Const. Fund, Series I, Interest Fund	180 52
Metropolitan Parks Const. Fund, Series II, Interest Fund	74 33
Metropolitan Parks Expense Fund	159,175 47
Metropolitan Parks Maintenance Fund, General	28,116 65
Metropolitan Parks Maintenance Fund, Boulevards	1,562 38
General Revenue	3,241 50
	<u>\$192,607 29</u>

BONDS, SINKING FUND AND NET DEBT

Metropolitan District Commission Headquarters Building	
Serial Notes issued:	
Year ending Nov. 30, 1932.	-
Period prior to Dec. 1, 1931	\$750,000 00
	<u>\$750,000 00</u>
Serial Notes paid:	
Year ending Nov. 30, 1932.	\$150,000 00
Period prior to Dec. 1, 1931	300,000 00
	<u>450,000 00</u>
Serial Notes outstanding Nov. 30, 1932	\$300,000 00

*Reverted.

Metropolitan Parks Maintenance Fund, Boulevards, Specials — Continued

Net Debt:

Total, Dec. 1, 1932	\$300,000 00
Total, Dec. 1, 1931	450,000 00
Decrease during 1932	\$150,000 00

Metropolitan Parks Construction, Series I

Bonds issued:

Sinking Fund Bonds:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$9,485,000 00
	\$9,485,000 00

Serial Bonds and Notes:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$1,117,043 96
	1,117,043 96
	\$10,602,043 96

Sinking Fund Bonds paid:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$125,000 00
	\$125,000 00

Serial Bonds and Notes paid:

Year ending Nov. 30, 1932	\$253,250 00
Period prior to Dec. 1, 1931	819,793 96
	1,073,043 96
	1,198,043 96

Bonds outstanding Dec. 1, 1932	\$9,404,000 00
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Sinking Fund:

Total, Dec. 1, 1932	\$7,340,438 65
Total, Dec. 1, 1931	7,019,753 47

Increase during 1932	\$320,685 18
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Net Debt:

Total, Dec. 1, 1932	\$2,063,561 35
Total, Dec. 1, 1931	2,637,496 53

Decrease during 1932	\$573,935 18
--------------------------------	--------------

Metropolitan Parks Construction Fund, Series II

Bonds issued:

Sinking Fund Bonds:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$2,567,500 00
	\$2,567,500 00

Serial Bonds and Notes:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$2,383,056 62
	2,383,056 62
	\$4,950,556 62

Serial Bonds and Notes paid:

Year ending Nov. 30, 1932	\$100,937 50
Period prior to Dec. 1, 1931	1,107,931 62
	1,208,869 12

Bonds outstanding Dec. 1, 1932	\$3,741,687 50
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Sinking Fund:

Total, Dec. 1, 1932	\$1,902,789 68
Total, Dec. 1, 1931	1,820,952 34

Increase during 1932	\$81,837 34
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Net Debt:

Total, Dec. 1, 1932	\$1,838,897 82
Total, Dec. 1, 1931	2,021,672 66

Decrease during 1932	\$182,774 84
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Charles River Basin Construction:

Bonds issued:

Sinking Fund Bonds:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$4,125,000 00
	\$4,125,000 00

Serial Bonds:

Year ending Nov. 30, 1932	—
Period prior to Dec. 1, 1931	\$375,000 00
	\$375,000 00
	\$4,500,000 00

Serial Bonds paid:

Year ending Nov. 30, 1932	\$10,000 00
Period prior to Dec. 1, 1931	192,000 00
	202,000 00

Bonds outstanding Dec. 1, 1932	\$4,298,000 00
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Sinking Fund:									
Total, Dec. 1, 1932	\$2,342,771 89
Total, Dec. 1, 1931	2,249,296 64
Increase during 1932	\$93,475 25
Net Debt:									
Total, Dec. 1, 1932	.	.	.	.	.	.	.	.	\$1,955,228 11
Total, Dec. 1, 1931	.	.	.	.	.	.	.	.	2,058,703 36
Decrease during 1932	.	.	.	.	.	.	.	.	\$103,475 25
Charles River Bridges Construction:									
Notes issued:*									
Year ending Nov. 30, 1932.	.	.	.	.	.	.	.	.	—
Period prior to Dec. 1, 1931	.	.	.	.	.	.	.	.	\$4,400,000 00
									\$4,400,000 00
Notes paid:									
Year ending Nov. 30, 1932.	.	.	.	.	.	.	.	.	—
Period prior to Dec. 1, 1931	.	.	.	.	.	.	.	.	\$4,400,000 00
									\$4,400,000 00

*Including renewals.

SEWERAGE DIVISION

Construction

METROBOLITAN SEWERAGE CONSTRUCTION FUND, NORTH SYSTEM

Total amount authorized to Dec. 1, 1931	.	.	.	.	.		\$8,611,521 55
Receipts:							
For the year ending Nov. 30, 1932	.	.	.	.	.	-
For the period prior to Dec. 1, 1931	.	.	.	.	.	\$87,514 78	
							87,514 78
							\$8,699,036 33

Expenditures

New Mystic Valley Main Sewer:									
Section 72:									
Legal:									
Services	.	.	.	.	\$16 58				
Expenses	.	.	.	.	5 00				
							\$21 58		
Easement	.	.	.	.			150 00		
								\$171 58	
Section 79:									
Legal services	.	.	.	.			\$2 85		
Easement	.	.	.	.			750 00		
								752 85	
Section 80:									
Legal services	.	.	.	.			\$2 50		
Easement	.	.	.	.			750 00		
								752 50	
Section 82:									
Construction:									
Contract, N. Cibotti Co.	.	.	.	.	\$10,393 28				
Labor and materials	.	.	.	.	1,896 21				
							\$12,289 49		
Engineering:									
Services	.	.	.	.	\$6,845 32				
Expenses	.	.	.	.	396 36				
							7,241 68		
Legal:									
Services	.	.	.	.	\$331 29				
Expenses	.	.	.	.	28 90				
							360 19		
Easements	.	.	.	.			1,200 00		
Appraising	.	.	.	.			175 00		
								21,266 36	
Section 109:									
Easements	.	.	.	.				1,200 00	
									\$24,143 29
Amounts charged to Nov. 30, 1931	.	.	.	.					8,630,499 46
									8,654,642 75
Balance, Dec. 1, 1932	.	.	.	.					\$44,393 58

METROPOLITAN SEWERAGE CONSTRUCTION FUND, SOUTH SYSTEM

Total amount authorized to Dec. 1, 1931	.	.	.	.	.	.	.	\$13,120,151 75
Authorization (Chapter 205, Acts of 1932)	.	.	.	.	.	.	.	100,000 00
								\$13,220,151 75
Receipts:								
For the year ending Nov. 30, 1932	.	.	.	.	.	.	-
For the period prior to Dec. 1, 1931	.	.	.	.	.	.	\$24,599 61	
								24,599 61
								\$13,244,751 36

Metropolitan Sewerage Construction Fund, South System — Continued

Expenditures

New Neponset Valley Sewer:			
Section 107:			
Construction:			
Labor and materials		\$25 00	
Engineering:			
Services	\$1,286 77		
Expenses	30 77		
		1,317 54	
			\$1,342 54
Section 108:			
Engineering:			
Services		\$1,130 00	
Expenses		26 22	
			1,156 22
Section 109:			
Construction:			
Contract, V. Barletta Company			3,940 01
Part of Section 109:			
Construction:			
Contract, V. Barletta Co.	\$49,325 71		
Labor and materials	120 77		
		\$49,446 48	
Engineering:			
Services	\$4,030 00		
Expenses	245 15		
		4,275 15	
Legal:			
Services	\$40 36		
Expenses	7 28		
		47 64	
Easements		4,750 00	
Appraising		25 00	
			58,544 27
Part of Section 110:			
Construction:			
Contract, J. H. Ferguson & Company	\$33,766 12		
Labor and materials	24 70		
		\$33,790 82	
Engineering:			
Services	\$2,205 00		
Expenses	295 17		
		2,500 17	
Legal services		21 88	
Easements		6,250 00	
Appraising		50 00	
			42,612 87
Section 111:			
Construction:			
Contract, Frank W. Christy	\$27,310 02		
Labor and materials	35 00		
		\$27,345 02	
Engineering:			
Services	\$680 00		
Expenses	28 66		
		708 66	
			28,053 68
Section 112:			
Construction:			
Contract, C. and R Construction Co.		\$30,702 47	
Engineering:			
Services	\$525 00		
Expenses	64 08		
		589 08	
			31,291 55
Section 113:			
Construction:			
Contract, A. Baruffaldi	\$6,713 87		
Labor and materials	35 00		
		\$6,748 87	
Engineering services		350 00	
			7,098 87
Section 114:			
Construction:			
Contract, V. Barletta Co.	\$58,517 99		
Labor and materials	642 76		
		\$59,160 75	
Engineering:			
Services	\$5,319 75		
Expenses	946 51		
		6,266 26	
Legal:			
Services	\$103 90		
Expenses	11 39		
		115 29	
Easements		4,000 00	
			69,542 30

Metropolitan Sewerage Construction Fund, South System — Continued

Section 115:

Construction:				
Contract, A. D. Daddario			\$9,487 80	
Engineering:				
Services	\$250 00			
Expenses	12 15			
			<u>262 15</u>	
Legal:				
Services	\$103 90			
Expenses	11 40			
			<u>115 30</u>	
Easements			4,000 00	
			<u>13,865 25</u>	

Section 116:

Construction:				
Contract, A. D. Daddario	\$7,464 26			
Labor and materials	10 43			
			<u>\$7,474 69</u>	
Engineering:				
Services	\$960 00			
Expenses	13 56			
			<u>973 56</u>	
Legal:				
Services	\$57 30			
Expenses	16 64			
			<u>73 94</u>	
Easements			1,298 00	
			<u>9,820 19</u>	

Section 117:

Construction:				
Contract, J. F. Fitzgerald				
Construction Co.	\$38,732 45			
Labor and materials	376 82			
			<u>\$39,109 27</u>	
Engineering:				
Services	\$3,214 50			
Expenses	276 24			
			<u>3,490 74</u>	
Legal:				
Services	\$38 60			
Expenses	8 62			
			<u>47 22</u>	
Easements			502 00	
			<u>43,149 23</u>	

Section 118:

Construction:				
Contract, C. and R. Con-				
struction Co.	\$50,436 57			
Labor and materials	1,326 45			
			<u>\$51,763 02</u>	
Engineering:				
Services	\$5,238 25			
Expenses	616 03			
			<u>5,854 28</u>	
Legal:				
Services	\$106 21			
Expenses	14 60			
			<u>120 81</u>	
Easements			1,010 00	
Appraising			125 00	
			<u>58,873 11</u>	

Section 119:

Construction:				
Contract, Frank W. Christy	\$24,701 26			
Labor and materials	585 07			
			<u>\$25,286 33</u>	
Engineering:				
Services	\$2,301 61			
Expenses	276 71			
			<u>2,578 32</u>	
Legal services			11 83	
Easements			470 00	
			<u>28,346 48</u>	

Section 120:

Construction:				
Contract, A. Baruffaldi	\$45,475 00			
Labor and materials	1,018 54			
			<u>\$46,493 54</u>	
Engineering:				
Services	\$8,253 00			
Expenses	1,895 81			
			<u>10,148 81</u>	
Legal:				
Services	\$279 02			
Expenses	13 11			
			<u>292 13</u>	
Easements			2,475 00	
Appraising			120 00	
			<u>59,529 48</u>	

Metropolitan Sewerage Construction Fund, South System — Continued

Section 121:

Construction:			
Contract, V. Barletta Co.	\$16,438 99		
Labor and materials	4,707 33		
		\$21,146 32	
Engineering:			
Services	\$9,007 17		
Expenses	1,637 85		
		10,645 02	
Legal:			
Services	\$250 62		
Expenses	8 45		
		259 07	
Easements		550 00	
Appraising		250 00	
			\$32,850 41
Miscellaneous			40 80
			\$490,057 26

Sewers in Quincy, Weymouth and Braintree:

Section 122:

Construction:			
Contract, A. D. Daddario	\$2,700 87		
Labor and materials	410 95		
		\$3,111 82	
Engineering:			
Services	\$1,712 50		
Expenses	579 10		
		2,291 60	
Legal:			
Services	\$37 56		
Expenses	20 43		
		57 99	
Appraising		100 00	
			\$5,561 41

Section 123:

Construction:			
Contract, Bay State Dredging and Contracting Co.	\$101,343 37		
Labor and materials	58 10		
		\$101,401 47	
Engineering:			
Services	\$4,804 97		
Expenses	1,456 19		
		6,261 16	
Legal:			
Services	\$152 25		
Expenses	11 85		
		164 10	
Easements		925 00	
Appraising		50 00	
			108,801 73

Section 124:

Construction:			
Contract, C. and R. Con- struction Co.	\$25,806 00		
Labor and materials	881 06		
		\$26,687 06	
Engineering:			
Services	\$4,380 00		
Expenses	798 75		
		5,178 75	
Legal:			
Services	\$158 35		
Expenses	2 40		
		160 75	
Appraising		50 00	
			32,076 56

Section 125:

Construction:			
Contract, George M. Byrne	\$70,692 30		
Labor and materials	340 62		
		\$71,032 92	
Engineering:			
Services	\$4,278 75		
Expenses	1,217 10		
		5,495 85	
Legal:			
Services	\$259 55		
Expenses	29 94		
		289 49	
Easements		1,250 00	
Appraising		75 00	
			78,143 26

Metropolitan Sewerage Construction Fund, South System — Continued

Braintree-Weymouth Pumping Station:

Construction:					
Labor and materials	\$1,797	29			
Engineering expenses	314	33			
Legal expenses	2	02			
Advertising	31	55			
	<u> </u>			2,145	19
Miscellaneous . . . . .	.	.	.	41	96
				<u> </u>	
					\$226,770 11

Gravity Drainage, City of Quincy:

Construction:

Contracts:

Contractors:						
A. D. Daddario	.	.	\$29,869	23		
Turbine Equipment Co.	.	.	8,386	25		
M. Spinelli and Sons	.	.	3,597	15		
					\$41,852	63
Labor and materials	.	.	.	.	2,670	51
						\$44,523 14
Engineering:						
Services	.	.	.	.	\$1,500	00
Expenses	.	.	.	.	1,043	06
						2,543 06
						47,066 20

Boston-Newton Main Sewer:

Section 87:

Engineering:

[illegible]

Miscellaneous

DRAINAGE IN EVERETT, MALDEN AND REVERE

[illegible]

Maintenance

METROPOLITAN SEWERAGE MAINTENANCE FUND, NORTH SYSTEM

Appropriation (Chapter 170, Acts of 1932).	\$356,400 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	28,308 33
	<hr/>
	\$384,708 33

Expenditures

Retirement payments	.	.	.	.	.	.	\$4,780	50
Industrial accident compensation	.	.	.	.	.	.	713	57

Administration:

Salaries:

Commissioners	\$1,245	63	
Secretary and clerks	4,995	44	
Janitors and cleaners	2,193	02	
			\$8,434 09
Rent, care and lighting of building			1,799 74
Stationery, office supplies and expenses			847 69
Printing			90 76
			<u>11,172 28</u>
Engineering:			
Salaries:			
Chief engineer and assistants	\$14,334	19	
Supplies and miscellaneous expenses		60 32	
			<u>14,394 51</u>

Deer Island Pumping Station:

Labor	.	.	.	.	.	.	.	\$43,436	26
Fuel	.	.	.	.	.	.	.	23,807	13
Repairs	.	.	.	.	.	.	.	2,858	04
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	4,668	18
								74,769	61

Metropolitan Sewerage Maintenance Fund, North System — Continued

East Boston Pumping Station:			
Labor	.	.	\$37,966 65
Fuel	.	.	16,631 92
Repairs	.	.	14,210 58
Supplies and miscellaneous expenses	.	.	6,133 79
			\$74,942 94
Charlestown Pumping Station:			
Labor	.	.	\$32,287 77
Fuel	.	.	5,387 68
Repairs	.	.	251 66
Supplies and miscellaneous expenses	.	.	2,453 69
			40,380 80
Alewife Brook Pumping Station:			
Labor	.	.	\$16,927 49
Fuel	.	.	2,405 17
Repairs	.	.	76 70
Supplies and miscellaneous expenses	.	.	1,279 63
			20,688 99
Reading Pumping Station:			
Labor	.	.	\$7,434 57
Fuel	.	.	131 81
Repairs	.	.	181 95
Supplies and miscellaneous expenses	.	.	2,866 30
			10,614 63
Sewer Lines, Buildings and Grounds:			
Engineering assistants	.	.	\$3,562 22
Labor	.	.	72,237 36
Repairs	.	.	2,095 69
Supplies and miscellaneous expenses	.	.	11,069 78
Retirement of Veterans	.	.	88 93
			89,053 98
Stables:			
Labor	.	.	\$2,625 00
Supplies and miscellaneous expenses	.	.	477 92
			3,102 92
			\$344,614 73
Balance, Dec. 1, 1932	.	.	\$40,093 60

METROPOLITAN SEWERAGE MAINTENANCE FUND, SOUTH SYSTEM

Appropriation (Chapter 170, Acts of 1932).	.	.	.	.	.	.	.	\$233,700 00
" (Chapter 307, Acts of 1932).	.	.	.	.	.	.	.	800 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	.	.	.	.	.	.	.	6,630 14
								\$241,130 14
				<i>Expenditures</i>				
Retirement payments	.	.	.	.	.	.	.	\$3,266 79
Industrial accident compensation	.	.	.	.	.	.	.	34 00
Administration:								
Salaries:								
Commissioners	.	.	.	.	.	.	.	\$1,245 65
Secretary and clerks	.	.	.	.	.	.	.	4,995 42
Janitors and cleaners	.	.	.	.	.	.	.	2,193 07
								\$8,434 14
Rent, care and lighting of building	.	.	.	.	.	.	.	1,799 96
Stationery, office supplies and expenses	.	.	.	.	.	.	.	1,236 71
Printing	.	.	.	.	.	.	.	170 76
								11,641 57
Engineering:								
Salaries:								
Chief engineer and assistants.	.	.	.	.	.	.	.	\$9,270 00
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	68 82
								9,338 82
Ward Street Pumping Station:								
Labor	.	.	.	.	.	.	.	\$51,487 00
Fuel	.	.	.	.	.	.	.	12,571 05
Repairs	.	.	.	.	.	.	.	2,688 01
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	4,535 07
								71,281 13
Quincy Pumping Station:								
Labor	.	.	.	.	.	.	.	\$16,749 47
Fuel	.	.	.	.	.	.	.	2,595 94
Repairs	.	.	.	.	.	.	.	6,471 40
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	1,446 55
								27,263 36
Squantum Pumping Station:								
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	115 20
Nut Island Screen House:								
Labor	.	.	.	.	.	.	.	\$17,377 36
Fuel	.	.	.	.	.	.	.	1,426 83
Repairs	.	.	.	.	.	.	.	1,943 30
Supplies and miscellaneous expenses	.	.	.	.	.	.	.	1,139 30
								21,886 79

Metropolitan Sewerage Maintenance Fund, South System — Concluded

Sewer Lines, Buildings and Grounds:

Engineering assistants	\$7,105 50	
Labor	44,697 07	
Repairs	647 31	
Supplies and miscellaneous expenses	4,425 19	
Retirement of Veterans	320 70	
Pumping by City of Boston	11,998 37	
		\$69,194 14

Stables:

Labor	\$787 50	
Supplies and miscellaneous expenses	286 37	
		1,073 87

Damages, Victor J. Norling (Chapter 32, Resolves of 1932)	800 00	\$215,895 67
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Balance, Dec. 1, 1932		\$25,234 47
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Analysis of 1932 Receipts

Credited to:

Metropolitan Sewerage Sinking Fund, North System	\$175 00	
Metropolitan Sewerage Construction Fund, North System	17 89	
Metropolitan Sewerage Maintenance Fund, North System	8,141 76	
Metropolitan Sewerage Maintenance Fund, South System	8,008 93	
Metropolitan Sewerage Interest Fund, North System	79 88	
Metropolitan Sewerage Interest Fund, South System	129 89	
		\$16,553 35

BONDS, SINKING FUNDS AND NET DEBT

Metropolitan Sewerage Construction, North System:

Bonds issued:

Sinking Fund Bonds:

Year ending Nov. 30, 1932	—	
Period prior to Dec. 1, 1931	\$6,563,000 00	
		\$6,563,000 00

Serial Bonds:

Year ending Nov. 30, 1932	—	
Period prior to Dec. 1, 1931	\$1,725,500 00	
		\$1,725,500 00
		\$8,288,500 00

Sinking Fund Bonds paid:

Year ending Nov. 30, 1932	—	
Period prior to Dec. 1, 1931	\$5,795,000 00	
		\$5,795,000 00

Serial Bonds paid:

Year ending Nov. 30, 1932	\$94,500 00	
Period prior to Dec. 1, 1931	927,000 00	
		1,021,500 00
		6,816,500 00

Bonds outstanding Dec. 1, 1932		\$1,472,000 00
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Sinking Fund:

Total, Dec. 1, 1932	\$305,298 20	
Total, Dec. 1, 1931	281,096 68	

Increase during 1932		\$24,201 52
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Net Debt:

Total, Dec. 1, 1932	\$1,166,701 80	
Total, Dec. 1, 1931	1,285,403 32	

Decrease during 1932		\$118,701 52
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Metropolitan Sewerage Construction, South System:

Bonds issued:

Sinking Fund Bonds:

Year ending Nov. 30, 1932	—	
Period prior to Dec. 1, 1931	\$8,877,912 00	
		\$8,877,912 00

Serial Bonds:

Year ending Nov. 30, 1932	\$965,000 00	
Period prior to Dec. 1, 1931	2,925,000 00	
		3,890,000 00
		\$12,767,912 00

Sinking Fund Bonds paid:

Year ending Nov. 30, 1932	—	
Period prior to Dec. 1, 1931	\$800,000 00	
		\$800,000 00

Serial Bonds paid:

Year ending Nov. 30, 1932	\$146,000 00	
Period prior to Dec. 1, 1931	546,000 00	
		692,000 00
		1,492,000 00

Bonds outstanding Dec. 1, 1932		\$11,275,912 00
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Sinking Fund:

Total, Dec. 1, 1932	\$4,940,773 57
Total, Dec. 1, 1931	4,516,349 42

Increase during 1932	\$424,424 15
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Net Debt:

Total, Dec. 1, 1932	\$6,335,138 43
Total, Dec. 1, 1931	5,940,562 58

Increase during 1932	\$394,575 85
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WATER DIVISION

Construction

METROPOLITAN WATER CONSTRUCTION FUND

Total amount authorized to Dec. 1, 1931	\$47,895,000 00
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Receipts:

For the year ending Nov. 30, 1932	\$3,128 03
For the period prior to Dec. 1, 1931	329,215 00
	<u>332,343 03</u>

Expenditures

\$48,227,343 03

General:

Credit on account of stock transferred to other accounts	\$2,756 22
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Certain Improvements:

Meters and Connections:

Contract, Builders Iron Foundry	\$3,230 72
Labor and materials	6,029 54
	<u>9,260 26</u>

Property for Protection of Water Supply:

Land	\$2,050 00
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Legal:

Services	\$123 28
Expenses	26 26
	<u>149 54</u>

2,199 54

Additional Weston Aqueduct Supply Main:

Section 14:

Construction:

Contract, C. and R. Construction Co.	\$16,457 57
Labor and materials	306 22
	<u>\$16,763 79</u>

Engineering:

Services	\$2,366 25
Expenses	50 70
	<u>2,416 95</u>

Legal expenses	2 50
Easements	6,694 90
	<u>\$25,878 14</u>

Northern High Service Pipe Lines, Section 54:

Engineering services	88 00
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Northern High Service Pipe Lines, Section, 55:

Construction:

Contract, Cenedella and Co.	\$4,327 12
-------------------------------------	------------

Engineering:

Services	\$553 00
Expenses	40 69
	<u>593 69</u>

4,920 81

Northern High Service Pipe Lines, Section 56:

Engineering:

Services	\$868 75
Expenses	59 03
	<u>927 78</u>

31,814 73

\$40,518 31

Amounts charged to Nov. 30, 1931	48,101,100 25
	<u>48,141,618 56</u>

Balance, Dec. 1, 1932	\$85,724 47
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Maintenance

METROPOLITAN WATER MAINTENANCE FUND

Appropriation (Chapter 170, Acts of 1932)	\$894,520 00
Balance brought forward from 1931 appropriation to cover 1931 expenditures on 1932 books	29,029 22
	<u>\$923,549 22</u>

		Expenditures		
Retirement payments	.	.	.	\$11,064 06
Industrial accident compensation	.	.	.	3,220 77
Payments in lieu of taxes	.	.	.	61,156 16
Retirement of Veterans	.	.	.	43 43
Administration:				
Salaries:				
Commissioners	.	.	\$2,491 27	
Secretary and clerks	.	.	9,990 92	
Janitors and cleaners	.	.	4,386 15	
				\$16,868 34
Rent, care and lighting of building	.	.	.	3,587 29
Stationery, office supplies and expenses	.	.	.	1,521 80
Printing	.	.	.	181 52
				22,158 95
Engineering:				
Salaries:				
Chief engineer and assistants.	.	.	\$27,395 00	
Supplies and miscellaneous expenses	.	.	2,132 22	
				29,527 22
Wachusett Department:				
Superintendence	.	.	\$16,213 46	
Labor	.	.	95,122 49	
Supplies and miscellaneous expenses	.	.	21,389 24	
				132,725 19
Sudbury Department:				
Superintendence	.	.	\$17,519 30	
Labor	.	.	134,650 25	
Supplies and miscellaneous expenses	.	.	19,344 67	
				171,514 22
Distribution Department:				
Superintendence	.	.	\$17,070 88	
Labor	.	.	146,654 89	
Supplies and miscellaneous expenses	.	.	39,181 88	
				202,907 65
Pumping Service:				
Superintendence	.	.	\$11,051 76	
Arlington Pumping Station:				
Labor	.	.	\$19,290 12	
Fuel	.	.	5,110 11	
Repairs	.	.	443 05	
Supplies and miscellaneous expenses	.	.	774 99	
				25,618 27
Chestnut Hill Pumping Station, No. 1:				
Labor	.	.	\$35,102 95	
Fuel	.	.	8,138 59	
Repairs	.	.	2,159 88	
Supplies and miscellaneous expenses	.	.	2,274 62	
				47,676 04
Chestnut Hill Pumping Station, No. 2:				
Labor	.	.	\$49,598 59	
Fuel	.	.	19,374 96	
Repairs	.	.	3,352 44	
Supplies and miscellaneous expenses	.	.	2,101 91	
				74,427 90
Spot Pond Pumping Station:				
Labor	.	.	\$25,722 51	
Fuel	.	.	8,046 23	
Repairs	.	.	879 46	
Supplies and miscellaneous expenses	.	.	1,290 61	
				35,938 81
Hyde Park Pumping Station:				
Labor	.	.	\$17,485 25	
Fuel	.	.	2,240 90	
Repairs	.	.	437 21	
Supplies and miscellaneous expenses	.	.	616 32	
				20,779 68
Booster Pumping				
				215,492 46
				\$849,810 11
Balance, Dec. 1, 1932				\$73,739 11

METROPOLITAN WATER MAINTENANCE FUND, SPECIALS

CLEARING LAND

CLEARING LAND											
Appropriation (Chapter 1, Acts of 1931)	.	.	.	.	.	.	.	.	.	.	\$10,000 00
" (Chapter 14, Acts of 1931)	.	.	.	.	.	.	.	.	.	.	5,000 00
											<hr/>
Expended to Nov. 30, 1931	.	.	.	.	.	.	.	.	.	.	\$15,000 00
											<hr/>
											\$76 29
<i>Expenditures</i>											
Labor	.	.	.	.	.	.	.	.	.	.	76 29

PURCHASE OF BOILERS, 1931

Appropriation (Chapter 245, Acts of 1931, Item 694)	\$30,000 00
Expended to Nov. 30, 1931	28,464 00
	<hr/>
	\$1,536 00

Expenditures

Construction:	
Contract, Standard Asbestos Covering Co., Inc.	1,536 00

PURCHASE OF BOILERS, 1932

Appropriation (Chapter 170, Acts of 1932)	\$40,000 00
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Expenditures

Construction:		
Contract, D. M. Dillon Steam Boiler Works	\$13,590 60	
Labor and materials	5,465 01	
	<hr/>	\$19,055 61
Engineering services		1,501 53
Consulting engineer		595 23
Advertising		51 35
		<hr/>
		21,203 72
Balance, Dec. 1, 1932		<hr/>
		\$18,796 28

ADDITIONAL PUMPING EQUIPMENT

Appropriation (Chapter 245, Acts of 1931, Item 695)	\$50,000 00
“ (Chapter 170, Acts of 1932)	50,000 00
	<hr/>
	\$100,000 00
Expended to Nov. 30, 1931	3,618 48
	<hr/>
	\$96,381 52

Expenditures

Construction:		
Contracts:		
D. M. Dillon Steam Boiler Works	\$5,440 00	
Youlden, Smith and Hopkins	1,215 30	
P. S. Thorsen Co. of Mass.	348 50	
Warren Steam Pump Co.	12,839 80	
R. S. Brine Transportation Co.	367 00	
Chapman Valve Manufacturing Co.	956 00	
Warren Pipe Co.	4,216 75	
	<hr/>	\$25,383 35
Labor and materials		33,404 33
		<hr/>
		\$58,787 68
Engineering:		
Services	\$12,692 90	
Expenses	549 70	
	<hr/>	\$13,242 60
Consulting engineer		595 10
Advertising		50 60
		<hr/>
		72,675 98
Balance, Dec. 1, 1932		<hr/>
		\$23,705 54

IMPROVEMENTS, SUPPLY MAINS, ETC.

Appropriation (Chapter 245, Acts of 1931, Item 693)	\$400,000 00
“ (Chapter 170, Acts of 1932)	350,000 00
	<hr/>
	\$750,000 00
Expended to Nov. 30, 1931	345,950 80
	<hr/>
	\$404,049 20

Expenditures

Section 13:		
Construction:		
Contract, C. & R. Construction Co.	\$138,879 48	
Labor and materials	37,875 12	
	<hr/>	\$176,754 60
Engineering:		
Services	\$21,563 71	
Expenses	929 97	
	<hr/>	22,493 68
Legal:		
Services	\$34 91	
Expenses	32 70	
	<hr/>	67 61
		<hr/>
		\$199,315 89
Section 14:		
Construction:		
Contract, Thomas J. McCue	\$11,376 99	
Labor and materials	11,640 99	
	<hr/>	\$23,017 98

[illegible]

Analysis of 1932 Receipts

Credited to:						
Metropolitan Water Loan Interest Fund	.	.	.	.	.	\$229 74
Metropolitan Water Construction Fund	.	.	.	.	.	3,128 03
Metropolitan Water Sinking Fund	.	.	.	.	.	105,791 55
Metropolitan Water Maintenance Fund	.	.	.	.	.	20,465 82
						<u>\$129,615 14</u>

BONDS, SINKING FUNDS AND NET DEBT

Metropolitan Water Construction:					
Bonds issued:					
Sinking Fund:					
Year ending Nov. 30, 1932	.	.	-		
Period prior to Dec. 1, 1931	.	.	\$41,398,000	00	
					\$41,398,000 00
Serial Bonds:					
Year ending Nov. 30, 1932	.	.	-		
Period prior to Dec. 1, 1931	.	.	\$4,287,000	00	
					4,287,000 00
					\$45,685,000 00
Serial Bonds paid:					
Year ending Nov. 30, 1932.	.	.	.	\$114,000	00
Period prior to Dec. 1, 1931	.	.	.	1,200,000	00
					1,314,000 00
Bonds outstanding Dec. 1, 1932	.	.	.	.	\$44,371,000 00
Sinking Fund:					
Total, Dec. 1, 1932	.	.	.	\$31,279,984	96
Total, Dec. 1, 1931	.	.	.	29,935,468	43
Increase during 1932	.	.	.	.	\$1,344,516 53
Net Debt:					
Total, Dec. 1, 1932	.	.	.	\$13,091,015	04
Total, Dec. 1, 1931	.	.	.	14,549,531	57
Decrease during 1932	.	.	.	.	\$1,458,516 53
Metropolitan Additional Water Construction:					
Bonds issued:					
Serial Bonds:					
Year ending Nov. 30, 1932	.	.	.	\$5,000,000	00
Period prior to Dec. 1, 1931	.	.	.	17,500,000	00
					\$22,500,000 00
Serial Bonds paid:					
Year ending Nov. 30, 1932	.	.	.	\$614,000	00
Period prior to Dec. 1, 1931	.	.	.	1,169,000	00
					1,783,000 00
Bonds outstanding Dec. 1, 1932	.	.	.	.	\$20,717,000 00
Net Debt: (under Metropolitan District Water Supply Commission)					
Total, Dec. 1, 1932	.	.	.	\$20,717,000	00
Total, Dec. 1, 1931	.	.	.	16,331,000	00
Increase during 1932	.	.	.	.	\$4,386,000 00
Total Net Debt, Dec. 1, 1932	.	.	.	\$33,808,015	04
Total Net Debt, Dec. 1, 1931	.	.	.	30,880,531	57
Total increase during 1932.	.	.	.	.	\$2,927,483 47

APPENDIX NO. 1

CONTRACTS MADE AND PENDING DURING

Contract Number	WORK	Number of Bids	Lowest
181 ¹	Widening Revere Beach Parkway from the Fellsway to Saugus Branch Bridge.	21	\$9,109 00
182 ¹ ²	Resurfacing of Fellsway West from Cherry Street and Fulton Street, and between Forest Street and Elm Street, Medford.	15	39,024 00
183 ¹	Reconstruction of Bold Knob Road westerly, 600 feet from Gordon Avenue, and Turtle Pond Road from Bold Knob Road to Dedham Parkway, Stony Brook Reservation, Boston.	11	6,134 50
184 ¹	Reconstruction of Chickatawbut Road from a point about 5,300 feet easterly from Randolph Avenue to the intersection of Wampatuck Road, Quincy.	18	21,395 00
185 ¹	Resurfacing Furnace Brook Parkway from Willard Street to Bunker Hill Lane, Quincy.	12	9,976 50
186 ¹	Resurfacing Lynn Shore Reservation from Washington Street, Lynn, to Humphry Street, Swampscott.	11	38,340 00
187 ¹	Resurfacing Soldiers Field Road, Charles River Reservation (Speedway Section) from Western Avenue to Telford Street, Boston.	11	7,254 90
188 ¹	Widening and resurfacing Memorial Drive, between Brookline Street and Fowler Street, Cambridge.	10	30,064 00
189 ¹ ⁴	Construction of Hammond Pond Parkway, Newton Street to Boylston Street, Brookline and Newton.	17	87,314 00
190 ¹	Reconstructing roadway, Nantasket Beach Reservation, between Atlantic Hill and Bay Street, Hull.	16	40,584 50
191	Resurfacing Middlesex Fells Parkway, easterly roadway, from Mystic Avenue to Wellington Bridge, Somerville.	8	13,840 60
192	Excavation, filling, grading, surfacing, shore protection, concrete and granite masonry, and boat landings, southerly from Longfellow Bridge in Boston.	11	42,008 00
193 ¹	Resurfacing Blue Hill River Road from Randolph Avenue, Quincy, to West Street, Braintree.	10	28,143 00
194	Construction of Mystic Valley Parkway from Revere Beach Parkway to Mystic Avenue at Harvard Street, Medford.	8	75,480 00
195	Traffic circle at the junction of South Border Road, Forest Street and Fellsway Street West, Medford.	11	14,931 00
196 ³	Traffic control signals, signs, and lines on the Old Colony Parkway, from Taylor Street to Old Colony Terrace, Boston.	2	14,832 00
197	Widening and reconstructing Paul's Bridge and approaches over the Neponset River at East Milton Street, Boston, and Milton Street, Milton.	14	18,686 50
198	Constructing traffic road from Cambridge Street about 570 feet southerly on westerly side of Soldiers Field Road, Boston (Brighton District).	8	3,416 60

¹Work completed.
²Fourth lowest bid.
³Highest bid.
⁴Town of Brookline paid \$10,772.37 on this contract.

APPENDIX NO. 1

THE YEAR 1932 — PARKS DIVISION

Contractor	Date of Contract	Date of Completion	Value of Work done Dec. 31, 1932
M. McDonough Co..	April 14, 1932	May 17, 1932	\$9,056 66
C. & R. Construction Co.	May 5, 1932	Aug. 30, 1932	41,629 68
Coleman Brothers, Inc.	June 16, 1932	July 25, 1932	7,094 21
A. G. Tomasello & Son, Inc.	May 26, 1932	Aug. 18, 1932	18,118 32
Coleman Brothers, Inc.	June 30, 1932	Aug. 27, 1932	10,706 03
Simpson Bros. Corp.	July 14, 1932	Oct. 5, 1932	40,717 45
M. McDonough Co.	July 28, 1932	Aug. 23, 1932	8,096 41
Simpson Bros. Corp.	Sept. 15, 1932	Dec. 10, 1932	29,082 70
M. McDonough Co.	Aug. 11, 1932	Dec. 19, 1932	92,893 63
M. McDonough Co.	Sept. 22, 1932	Dec. 10, 1932	53,951 77
C. & R. Construction Co.	Sept. 29, 1932	—	3,171 10
C. & R. Construction Co.	Nov. 10, 1932	—	2,491 50
C. & R. Construction Co.	Sept. 29, 1932	—	25,978 61
M. McDonough Co..	Nov. 17, 1932	—	11,760 00
C. J. Maney Co., Inc.	Oct. 20, 1932	—	16,619 41
Municipal Signal and Supply Co.	Nov. 29, 1932	—	4,800 00
Lee Construction Co.	Dec. 1, 1932	—	1,248 30
John P. Condon Corporation	Nov. 17, 1932	—	2,258 70

APPENDIX No. 2

CONTRACTS MADE AND PENDING DURING

(The details of Contracts made before

1 Num- ber of Con- tract	2 WORK	3 Num- ber of Bids	AMOUNT OF BID		6 Contractor
			4 Next to Lowest	5 Lowest	
80 ¹	Furnishing water valves; 24 12-inch, 16 16-inch, 24 20-inch, 6 36-inch screw-lift valves and 1 30-inch and 2 36-inch hydraulic lift valves.	5	\$37,253 00	\$32,416 00 ²	Crane Co., Chicago, Ill., (Valve Shop at Bridgeport, Conn.)
83	Furnishing and laying 60-inch electric-welded steel water pipes in Newton and Watertown.	10	121,860 00	121,455 00 ²	Thomas Joseph McCue, Watertown, Mass.
84	Pumping units for Chestnut Hill Pumping Station No. 1 in Boston.	6	66,753 00	64,199 00 ²	Warren Steam Pump Co., Inc., Warren, Mass.
85 ¹	Removal of Engine No. 1 from Chestnut Hill Pumping Station No.1 in Boston.	6	307 50	367 00 ²	R. S. Brine Transportation Co., Boston.
86 ¹	Furnishing and laying 60-inch electric-welded steel water pipes in Newton.	15	123,151 00 ²	121,970 00	Coleman Bros. Inc., Boston.
87 ¹	Furnishing sluice gates for Chestnut Hill Pumping Station No. 1 in Boston.	2	1,105 00	956 00 ²	The Chapman Valve Manufacturing Co., Indian Orchard, Mass.
88 ¹	Furnishing Venturi meters.	- ³	- ³	- ³	Builders Iron Foundry, Providence, R. I.
89 ¹	Furnishing cast-iron special castings.	5	9,856 00 ² ₄	9,800 00	Warren Pipe Company of Massachusetts, Inc., Boston.
35-M	Sale and purchase of electric energy to be developed at Wachusett Dam in Clinton.	- ³	- ³	- ³	New England Power Co. and Edison Electric Illuminating Company of Boston
36-M	Sale and purchase of electric energy to be developed at Sudbury Dam in Southborough.	- ³	- ²	- ³	Edison Electric Illuminating Company of Boston.

¹Contract completed.
²Contract based upon this bid.
³Competitive bids were not received.
⁴Lowest bidder on flanged castings.

APPENDIX No. 2

THE YEAR 1932 — WATER DIVISION

(1932 have been given in previous report.)

7	8	9	10
Date of Contract	Date of Completion of Contract	Prices of Principal Items of Contract	Value of Work done Dec. 31, 1932
Mar. 2, 1931	Mar. 3, 1932	See Annual Report for 1931.	\$32,901 08
June 2, 1931	—	See Annual Report for 1931.	138,031 30
Jan. 20, 1932	—	For steam driven centrifugal pumping unit of 1,400 H. P. and pumping capacity of 50 million gallons a day, \$41,816; for steam driven centrifugal pumping unit of 620 H. P. and pumping capacity of 15 million gallons a day, \$22,383.	25,679 60
Feb. 18, 1932	Mar. 5, 1932	Terms of settlement: Commonwealth to pay Contractor \$367.00 upon completion of work.	367 00
Mar. 29, 1932	Nov. 26, 1932	For furnishing and laying electric-welded steel pipes, \$12.48 per lin. ft.; for laying 36-inch, 48-inch and 60-inch cast-iron pipes, furnished by the Commonwealth, \$5.00 per lin. ft.; for laying 12-inch and 16-inch cast-iron pipe for blow-offs \$1.50 per lin. ft.; for laying 6-inch cast-iron pipes for air vents, \$1.00 per lin. ft.; for rock excavation above grade, \$4.00 per cu. yd.; for rock excavation and for earth excavation below grade, \$1.00 per cu. yd.; for chambers for 36-inch gate valves, \$125.00 per chamber; for chambers for blow-off and by-pass valves, \$70.00 per chamber; for chambers for air valves and man-holes, \$40.00 per chamber; for concrete for foundations and anchorages, \$6.50 per cu. yd.	138,538 19
Mar. 22, 1932	June 3, 1932	For 36-inch by 48-inch sluice gate, \$429.00; for 48-inch by 60-inch sluice gate, \$527.00.	956 00
Apr. 16, 1932	Aug. 8, 1932	For 30-inch Venturi meter tube and register, \$1,400; for 36-inch Venturi meter tube and register, \$1,800.	3,230 72
May 24, 1932	Nov. 4, 1932	For bell and spigot castings, \$79.00 and for flanged castings, \$115.00 per ton of 2,000 pounds.	10,572 70
Mar. 1, 1929	—	Sale and purchase to include on week days, excepting Saturday afternoons and legal holidays, all electricity generated after deduction of that used by Commission in connection with operation of its works in Wachusett Section. Contract to continue until terminated by either party by giving 6 months' notice, but not earlier than March 1, 1939.	167,158 26
Mar. 1, 1929	—	Sale and purchase to include all electricity generated after deduction of that used by Commission in connection with operation of its Sudbury Power Station. Contract to continue for 10 years.	105,506 28

CONTRACTS MADE AND PENDING DURING

1 Num- ber of Con- tract	2 WORK	3 Num- ber of Bids	AMOUNT OF BID		6 Contractor
			4 Next to Lowest	5 Lowest	
51-M ¹	Repairing roofs of Chestnut Hill Pumping Stations.	4	\$1,425 00	\$1,165 00 ²	Atlantic Roofing and Sky-light Works, Boston.
52-M ¹	Rewinding stators and furnishing and installing new field coil washers and wedges of generators, Wachusett Power Station.	- ³	- ³	- ³	Westinghouse Electric & Manufacturing Company, Boston.
53-M ¹	Furnishing vertical fire tube boilers for Chestnut Hill Pumping Stations in Boston.	8	22,283 00	21,760 00 ²	D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
54-M ¹	Removing 3 old boilers and erecting 4 new boilers at Chestnut Hill Pumping Stations in Boston.	6	2,105 00	1,514 00 ²	Youlden, Smith & Hopkins, Boston.
55-M ¹	Furnishing fuel oil storage tanks for Chestnut Hill Pumping Stations in Boston.	11	2,070 00 ²	1,928 00	Massachusetts Engineering Company, Inc., North Quincy, Mass.
56-M	Furnishing fuel oil burning equipment at Chestnut Hill Pumping Stations in Boston.	7	12,980 00 ²	12,422 00	Peabody Engineering Corp., New York.
57-M	Non-heat-conducting covering for 4 boilers at Chestnut Hill Pumping Stations	6	1,675 00	1,670 00 ²	P. S. Thorsen Company of Massachusetts, Boston.
58-M ¹	Waterproofing and Granolithic Work at Wachusett Dam, Clinton.	7	1,130 76	1,045 50 ²	Clinton Concrete Co., Clinton, Mass.
59-M	Furnishing and installing flexible stay bolts in boilers at Chestnut Hill Pumping Stations in Boston.	6	7,818 00	7,245 00 ²	D. M. Dillon Steam Boiler Works, Fitchburg, Mass.
60-M	Relaying water pipes under Neponset River in Hyde Park.	9	3,456 00	3,200 00 ²	L. P. Federico & Son, Dorchester.

¹Contract completed.²Contract based upon this bid.³Competitive bids were not received.

THE YEAR 1932 — WATER DIVISION — Continued

7	8	9	10
Date of Contract	Date of Completion of Contract	Prices of Principal Items of Contract	Value of Work done Dec. 31, 1932
Nov. 7, 1931	Mar. 22, 1932	See Annual Report for 1931.	\$1,165 00
Nov. 28, 1931	Mar. 14, 1932	See Annual Report for 1931.	7,000 00
May 17, 1932	Sept. 30, 1932	For 4 vertical fire tube boilers, 98 inches in diameter and 24 feet in height, for working steam pressure of 185 pounds per square inch, delivered on Metropolitan District Commission siding on Boston & Albany Railroad at Pumping Stations, \$5,440. each.	21,760 00
Aug. 22, 1932	Dec. 13, 1932	For unloading from freight car and erecting on foundation one new boiler at Chestnut Hill Pumping Station No. 1, \$272.00; for removing and disposing of 3 old boilers at Chestnut Hill Pumping Station No. 2, \$594.00; for unloading from freight cars and erecting on foundations 3 new boilers at Chestnut Hill Pumping Station No. 2, \$648.00.	1,514 00
Sept. 8, 1932	Oct. 28, 1932	For 2 steel fuel oil storage tanks, 22 ft. long and 7 ft. diameter, \$425 per tank; for 2 steel fuel oil storage tanks, 22 ft. long and 10 ft. diameter, \$610 per tank.	2,283 50
Oct. 4, 1932	-	For furnishing 11 fuel oil burners, with accessories and heat resisting linings, and 4 fuel oil pumps, oil heaters and accessories, \$12,980.	3,000 00
Sept. 14, 1932	-	For furnishing and applying non-heat-conducting covering at Chestnut Hill Pumping Station No. 1, to Boiler No. 28, \$410; at Station No. 2, to Boilers Nos. 29, 30 and 31, \$1,260.	500 00
Oct. 28, 1932	Dec. 2, 1932	For applying pitch, fabric and tarred felt built-up waterproofing, \$1.50 sq. yd.; for granolithic work, \$2.25 sq. yd.	1,045 50
Nov. 7, 1932	-	For furnishing and installing flexible stay bolts: in 110-inch diameter boiler, \$1,890; in 98-inch diameter boilers \$1,785 per boiler.	-
Nov. 17, 1932	-	For removing, cleaning, painting and relaying cast-iron water pipes, 12 inches in diameter, with flexible joints, \$20 per lin. ft.	2,000 00

APPENDIX NO. 3

TABLE No. 1. — Monthly Rainfall in Inches at Various Places on the Metropolitan Water Works, 1932

	January	February	March	April	May	June	July	August	September	October	November	December	Totals
Wachusett Watershed:													
Princeton	5.18	3.25	4.50	2.10	1.54	2.12	4.16	3.55	6.63	7.15	5.23	2.04	47.45
Jefferson	6.31	3.24	6.05	1.92	1.88	2.21	3.49	4.70	7.74	7.46	4.82	2.26	52.08
Sterling	5.69	2.94	5.55	2.26	1.48	2.16	3.80	3.52	7.04	7.46	5.58	2.19	49.67
Boylston	5.66	3.12	4.89	2.14	1.42	2.58	2.74	5.15	7.84	7.46	5.20	2.30	50.50
Sudbury Watershed:													
Sudbury Dam	4.65	2.78	5.59	2.17	1.33	3.37	2.03	4.80	10.96	6.76	4.94	1.95	51.33
Framingham	4.50	2.65	5.43	2.06	1.50	3.38	1.95	5.13	10.28	6.90	5.02	1.89	50.69
Ashland Dam	4.79	2.23	5.30	2.23	1.48	2.99	1.85	5.84	10.02	6.19	5.19	2.02	50.13
Cordaville	4.83	2.71	5.70	2.29	1.89	3.36	1.84	5.09	11.01	6.50	5.25	1.84	52.31
Lake Cochituate	4.85	2.62	5.44	1.77	1.53	3.46	2.04	5.73	9.24	7.81	5.24	1.90	51.63
Chestnut Hill Reservoir	5.16	2.92	5.58	1.77	1.47	2.27	1.63	4.85	5.15	8.14	5.62	2.06	46.62
Spot Pond	4.82	2.82	5.72	1.76	1.38	3.06	2.63	6.03	6.47	7.89	5.72	2.05	50.35
Average of all	5.13	2.84	5.43	2.04	1.54	2.81	2.56	4.95	8.40	7.25	5.26	2.04	50.25
Average, Wachusett Watershed	5.71	3.14	5.25	2.10	1.58	2.27	3.55	4.23	7.31	7.38	5.21	2.20	49.93
Average, Sudbury Watershed	4.69	2.59	5.51	2.19	1.55	3.28	1.92	5.21	10.57	6.59	5.10	1.92	51.12

TABLE NO. 2 — *Rainfall in Inches at Chestnut Hill Reservoir, 1932*

DATE			AMOUNT	DURATION		DATE			AMOUNT	DURATION	
Jan. 1	.	.	} 2.00 ¹	4.00 P.M. to		June 3	.	.	} .10	7.10 P.M. to 11.20 P.M.	
Jan. 3	.	.		2.40 A.M.		June 5	.	.			
Jan. 6	.	.	} .60	3.50 A.M. to		June 6	.	.	} .14	3.10 A.M. to 4.15 A.M.	
Jan. 7	.	.		7.00 A.M.		June 6	.	.		11.35 P.M. to	
Jan. 9	.	.	} .11 ²	12.45 A.M. to 9.00 A.M.		June 7	.	.	} .14	12.05 A.M.	
Jan. 9	.	.		4.00 P.M. to		June 7	.	.		12.45 P.M. to 6.30 P.M.	
Jan. 10	.	.	} .66 ¹	10.45 A.M.		June 9	.	.	} .03	5.30 P.M. to 9.00 P.M.	
Jan. 13	.	.		10.00 A.M. to 12.30 P.M.		June 12	.	.		11.00 P.M. to	
Jan. 15	.	.	} .05	12.40 P.M. to 3.00 P.M.		June 14	.	.	} .31	11.15 P.M.	
Jan. 17	.	.		6.00 A.M. to		June 16	.	.		11.00 A.M. to 4.00 P.M.	
Jan. 18	.	.	} .15 ¹	6.00 A.M.		June 17	.	.	} .79	2.45 A.M. to 7.00 A.M.	
Jan. 21	.	.		3.30 P.M. to		June 17	.	.		7.00 A.M. to 2.00 P.M.	
Jan. 22	.	.	} .38 ¹	12.15 P.M.		June 23	.	.	} .36	8.05 P.M. to 9.00 P.M.	
Jan. 23	.	.		1.50 P.M. to 11.45 P.M.		June 27	.	.		3.00 P.M. to	
Jan. 26	.	.	} .39	11.05 P.M. to		June 28	.	.	} .36	1.00 A.M.	
Jan. 27	.	.		2.15 P.M.		Total	.	.		2.27	
Jan. 29	.	.	} .31	3.15 P.M. to		July 1	.	.	} .84	4.15 P.M. to	
Jan. 30	.	.		12.30 P.M.		July 2	.	.		9.00 A.M.	
Total	.	.	5.16			July 4	.	.	} .12	9.00 A.M. to 6.15 P.M.	
Feb. 2	.	.	} .14 ²	8.00 A.M. to 9.00 P.M.		July 8	.	.		4.50 P.M. to 11.00 P.M.	
Feb. 3	.	.		2.15 P.M. to 7.00 P.M.		July 9	.	.	} .01	5.40 P.M. to 5.50 P.M.	
Feb. 4	.	.	} 1.63 ¹	5.15 P.M. to		July 22	.	.		2.30 P.M. to 3.30 P.M.	
Feb. 5	.	.		3.45 A.M.		July 23	.	.	} .03	7.30 P.M. to 8.15 P.M.	
Feb. 8	.	.	} .23 ¹	7.15 A.M. to 12.00 M.		July 27	.	.		8.00 A.M. to	
Feb. 9	.	.		5.45 A.M. to 7.00 A.M.		July 28	.	.	} .24	12.30 A.M.	
Feb. 10	.	.	} .03 ²	7.00 A.M. to 11.30 A.M.		July 29	.	.		10.30 A.M. to 5.30 P.M.	
Feb. 10	.	.		3.30 P.M. to		July 30	.	.	} .02	2.00 P.M. to 2.30 P.M.	
Feb. 10	.	.	} .12 ¹	7.00 A.M.		July 31	.	.		1.30 P.M. to 7.00 P.M.	
Feb. 11	.	.		10.30 A.M. to 3.30 P.M.		Total	.	.	1.63		
Feb. 11	.	.	} .31	9.00 A.M. to 9.00 P.M.		Aug. 2	.	.	} .14	10.30 P.M. to	
Feb. 12	.	.		10.30 P.M. to		Aug. 3	.	.		12.30 A.M.	
Feb. 17	.	.	} .04	5.30 A.M.		Aug. 3	.	.	} 1.18	1.00 P.M. to	
Feb. 17	.	.		3.30 P.M. to 7.00 P.M.		Aug. 4	.	.		2.30 A.M.	
Feb. 25	.	.	} .09 ¹	9.15 A.M. to		Aug. 8	.	.	} .29	1.15 P.M. to 3.30 P.M.	
Feb. 25	.	.		2.15 A.M.		Aug. 10	.	.		8.45 P.M. to	
Feb. 26	.	.	} .08 ²	1.20 A.M. to 7.00 A.M.		Aug. 11	.	.	} .66	11.45 A.M.	
Feb. 27	.	.				Aug. 18	.	.		7.15 P. M. to	
Feb. 28	.	.	} .06			Aug. 19	.	.	} 2.29	9.45 A.M.	
Feb. 29	.	.				Aug. 27	.	.		9.00 P.M. to	
Mar. 1	.	.	} .14 ²			Aug. 28	.	.	} .29	1.30 A.M.	
Total	.	.		2.92		Total	.	.		4.85	
Mar. 6	.	.	} 1.81	3.45 P.M. to		Sept. 2	.	.	} .86	2.45 A.M. to 4.45 A.M.	
Mar. 7	.	.		8.00 P.M.		Sept. 2	.	.		2.55 P.M. to 3.45 P.M.	
Mar. 17	.	.	} .03 ²	1.45 A.M. to 3.45 A.M.		Sept. 6	.	.	} .01	8.45 A.M. to 9.15 A.M.	
Mar. 17	.	.		11.00 A.M. to 7.00 P.M.		Sept. 16	.	.		5.30 A.M. to	
Mar. 19	.	.	} .03 ¹	11.00 A.M. to 2.00 P.M.		Sept. 17	.	.	} 3.35	12.30 A.M.	
Mar. 21	.	.		5.30 P.M. to 7.30 P.M.		Sept. 18	.	.		1.00 A.M. to 1.15 A.M.	
Mar. 22	.	.	} .40 ¹	3.00 A.M. to 1.30 P.M.		Sept. 22	.	.	} .03	10.00 P.M. to	
Mar. 26	.	.		3.40 P.M. to 7.00 P.M.		Sept. 23	.	.		7.00 A.M.	
Mar. 28	.	.	} .07	12.55 A.M. to		Sept. 25	.	.	} .05	1.45 A.M. to 6.30 A.M.	
Mar. 28	.	.		2.45 A.M.		Sept. 27	.	.		2.30 A.M. to	
Mar. 29	.	.	} 2.47 ¹	1.00 P.M. to		Sept. 28	.	.	} .39	7.00 A.M. to	
Mar. 31	.	.		3.45 A.M.		Sept. 28	.	.		3.30 P.M.	
Apr. 1	.	.	} .30			Total	.	.	5.15		
Total	.	.		5.58		Oct. 5	.	.	} .02	11.00 P.M. to	
Apr. 7	.	.	} .01	1.45 A.M. to 5.00 A.M.		Oct. 6	.	.		7.00 A.M.	
Apr. 9	.	.		7.00 A.M. to		Oct. 6	.	.	} .15	7.15 P.M. to	
Apr. 10	.	.	} .03	7.00 A.M.		Oct. 7	.	.		12.15 A.M.	
Apr. 10	.	.		2.55 A.M. to		Oct. 11	.	.	} .18	1.45 P.M. to 3.00 P.M.	
Apr. 11	.	.	} 1.28	7.00 A.M. to 12.30 P.M.		Oct. 17	.	.		2.15 P.M. to 2.40 P.M.	
Apr. 12	.	.		6.40 P.M. to 12.00 Mid		Oct. 17	.	.	} 6.64	11.30 P.M. to	
Apr. 12	.	.	} .17	11.45 A.M. to 11.00 P.M.		Oct. 20	.	.		3.00 P.M.	
Apr. 25	.	.		1.30 A.M. to 7.00 A.M.		Oct. 26	.	.	} 1.03	10.30 A.M. to	
Apr. 26	.	.	} .12			Oct. 27	.	.		6.30 P.M.	
Apr. 26	.	.				Oct. 31	.	.	} .02	2.30 P.M. to 8.00 P.M.	
Apr. 30	.	.	} .04			Total	.	.		8.14	
Apr. 30	.	.									
May 1	.	.	} .07								
Total	.	.		1.77							
May 1	.	.	} .60	7.00 A.M. to 11.00 P.M.							
May 6	.	.		9.30 P.M. to							
May 7	.	.	} .36	7.30 A.M.							
May 7	.	.		3.30 P.M. to 6.00 P.M.							
May 13	.	.	} .01	10.15 A.M. to 6.30 P.M.							
May 14	.	.		1.30 P.M. to 1.40 P.M.							
May 26	.	.	} .09	4.20 P.M. to 7.00 P.M.							
May 27	.	.		9.50 P.M. to 11.50 P.M.							
May 29	.	.	} .01	11.20 P.M. to 12.00 Mid							
May 29	.	.									
Total	.	.	.02								
Total	.	.	1.47								

¹Rain and Snow

²Snow

Day ends 7.00 A.M.

TABLE NO. 2 — *Rainfall in Inches at Chestnut Hill Reservoir, 1932*
Concluded

DATE	AMOUNT	DURATION	DATE	AMOUNT	DURATION
Nov. 1 . .	1.33	11.45 A.M. to 5.30 P.M.	Dec. 5 . .	.09	12.35 A.M. to 3.30 A.M.
Nov. 7 . .	1.45	12.30 A.M. to	Dec. 7 . .	.10	9.50 P.M. to
Nov. 9 . .		7.00 A.M.	Dec. 8 . .		12.45 A.M.
Nov. 9 . .	2.43	12.15 P.M. to	Dec. 10 . .	.56 ¹	5.10 P.M. to
Nov. 10 . .		2.00 P.M.	Dec. 12 . .		10.00 A.M.
Nov. 12 . .	.05	5.50 A.M. to 10.30 A.M.	Dec. 13 . .	.15 ²	7.20 P.M. to 11.45 P.M.
Nov. 16 . .	.16	5.30 P.M. to	Dec. 17 . .	.35 ²	2.00 P.M. to
Nov. 17 . .		6.20 A.M.	Dec. 18 . .		4.50 A.M.
Nov. 18 . .	.03 ¹	6.15 P.M. to	Dec. 23 . .	.14	3.30 P.M. to 11.45 P.M.
Nov. 19 . .		7.00 A.M.	Dec. 24 . .	.09	8.30 P.M. to
Nov. 19 . .	.13	2.45 P.M. to 8.30 P.M.	Dec. 25 . .	.56	8.00 A.M.
Nov. 26 . .	.04	3.15 A.M. to 7.00 A.M.	Dec. 27 . .		4.30 P.M. to
			Dec. 28 . .	.02	5.00 P.M.
			Dec. 30 . .		3.15 P.M. to
			Dec. 31 . .		4.30 A.M.
Total . .	5.62		Total . .	2.06	

Total for year 46.62 inches.
¹Rain and Snow
²Snow

TABLE NO. 3 — Wachusett System — Statistics of Flow of Water, Storage and Rainfall in 1932
(Watershed above dam = 108.84 square miles)

MONTH	GALLONS PER DAY										Rainfall (Inches)	Rainfall Col- lected (Inches)	Percent- age of Rainfall Col- lected
	Taken by Town of Clinton	Taken by City of Worcester	Received from Ware River Watershed ¹	Discharged into Wachusett Aqueduct ²	Wasted into River below Dam	Seepage through the North Dike ³	STORAGE ⁴		Total Yield of Water shed	Yield per Square Mile			
							Gain	Loss					
January .	—	—	71,874,000	86,984,000	1,713,000	697,000	166,980,000	—	184,500,000	1,695,000	5.71	3.024	53.0
February .	—	—	19,876,000	47,603,000	1,721,000	773,000	94,131,000	—	124,352,000	1,143,000	3.14	1.906	60.7
March .	—	—	29,816,000	97,529,000	1,700,000	803,000	126,110,000	—	196,326,000	1,804,000	5.25	3.218	61.3
April .	—	—	185,945,000	89,501,000	1,856,000	948,000	361,179,000	—	267,322,000	2,456,000	2.10	4.234	201.1
May .	—	—	5,468,000	101,168,000	1,713,000	980,000	—	21,497,000	76,877,000	706,000	1.58	1.260	79.7
June .	—	—	—	138,327,000	1,757,000	956,000	—	104,157,000	36,883,000	339,000	2.27	0.585	25.8
July .	—	—	—	122,245,000	1,719,000	932,000	—	101,535,000	23,361,000	215,000	3.55	0.383	10.8
August .	—	—	—	130,877,000	1,719,000	884,000	—	102,774,000	30,706,000	282,000	4.23	0.503	11.9
September .	—	—	—	94,456,000	1,714,000	852,000	—	41,609,000	55,413,000	509,000	7.31	0.880	12.0
October .	—	—	4,161,000	62,742,000	1,707,000	848,000	104,129,000	—	165,265,000	1,518,000	7.38	2.708	36.7
November .	—	—	—	11,150,000	1,733,000	924,000	242,693,000	—	251,700,000	2,313,000	5.21	3.992	76.7
December .	—	—	—	119,158,000	1,916,000	978,000	3,858,000	—	116,881,000	1,074,000	2.20	1.916	87.2
Total Av. for Yr.	—	—	26,224,000	92,146,000	1,747,000	881,000	59,808,000	—	127,181,000	1,169,000	49.93	24.609	49.3

¹Received from Ware River, not included in yield of Wachusett watershed.
²Including 184,000 gallons per day drawn from aqueduct for the supply of the Westborough State Hospital.
³Estimated.
⁴Aggregate storage in Wachusett Reservoir and in ponds and mill reservoirs.

TABLE No. 4 — Sudbury System — Statistics of Flow of Water, Storage and Rainfall in 1932

Watershed = 75.2 square miles

MONTH	GALLONS PER DAY										Rain-fall Col-lected (Inches)	Rain-fall Col-lected (Inches)	Percent- age of Rainfall Col- lected	
	Water received from Wachusett Reservoir ¹	Water discharged through Sudbury Aqueduct	Water discharged through Weston Aqueduct	Water used by Fram- ingham Water Works	Water diverted from Water- shed by Sewers, etc.	Water wasted from Farm Pond	Water wasted into River below Lowest Dam	STORAGE		Total Yield of Watershed				Yield per Square Mile
								Gain	Loss					
January	86,826,000	27,106,000	98,513,000	1,342,000	581,000	—	32,252,000	4,397,000	—	77,365,000	1,029,000	4.69	1.835	39.1
February	47,452,000	24,510,000	99,831,000	1,403,000	597,000	—	27,607,000	—	44,110,000	62,386,000	830,000	2.59	1.384	53.5
March	97,377,000	21,119,000	99,271,000	1,442,000	1,145,000	—	60,313,000	52,690,000	—	138,603,000	1,843,000	5.51	3.288	59.7
April	89,338,000	18,382,000	98,447,000	1,245,000	1,856,000	—	81,580,000	24,204,000	—	136,376,000	1,814,000	2.19	3.126	142.9
May	100,981,000	30,116,000	95,545,000	1,297,000	271,000	—	28,577,000	—	20,319,000	34,506,000	459,000	1.55	0.819	52.8
June	138,133,000	35,687,000	95,950,000	1,370,000	176,000	—	8,693,000	3,330,000	—	7,073,000	94,000	3.28	0.162	5.0
July	122,058,000	38,668,000	94,529,000	1,390,000	239,000	—	7,597,000	—	27,726,000	—7,361,000	—98,000	1.92	—0.175	—9.1
August	130,681,000	30,732,000	95,184,000	1,306,000	223,000	—	1,500,000	4,097,000	—	2,361,000	31,000	5.21	0.056	1.1
September	94,256,000	25,525,000	94,971,000	1,192,000	643,000	—	52,004,000	14,979,000	—	95,058,000	1,264,000	10.57	2.185	20.7
October	62,542,000	20,626,000	97,145,000	1,271,000	1,187,000	—	60,290,000	11,300,000	—	129,277,000	1,719,000	6.59	3.067	46.6
November	10,947,000	10,440,000	107,080,000	1,177,000	1,706,000	397,000	143,690,000	—	34,433,000	219,110,000	2,914,000	5.10	5.030	98.6
December	118,948,000	10,894,000	111,819,000 ²	1,348,000	707,000	—	54,645,000	10,877,000	—	71,342,000	949,000	1.92	1.692	87.7
Total Av. for Yr.	91,963,000	24,506,000	99,018,000	1,316,000	775,000	33,000	46,390,000	157,000	—	80,232,000	1,067,000	51.12	22.469	44.0

¹Not including 184,000 gallons per day drawn from the Wachusett Aqueduct for the supply of the Westborough State Hospital, not discharged into Sudbury Reservoir.

²Includes 565,000 gallons per day wasted from the Weston Aqueduct, not discharged into Weston Reservoir.

TABLE NO. 5 — *Cochituate System — Statistics of Flow of Water, Storage and Rainfall in 1932*
(Watershed of Lake = 17.58 Square miles¹⁾)

MONTH	GALLONS PER DAY							Rainfall (Inches)	Rainfall Collected (Inches)	Percent- age of Rainfall Collected
	Water discharged through Cochituate Aqueduct ²	Water diverted from Water- shed by Sewers, etc.	Water wasted at Outlet of Lake	STORAGE		Total Yield of Water- shed	Yield per Square Mile			
				Gain	Loss					
January	—	855,000	—	16,616,000	—	17,471,000	994,000	4.85	1.773	36.6
February	—	855,000	5,083,000	5,883,000	—	11,821,000	6,724,000	2.62	1.122	42.8
March	—	1,097,000	27,032,000	1,226,000	—	29,355,000	1,670,000	5.44	2.979	54.8
April	—	1,672,000	28,496,000	—	4,035,000	26,133,000	1,487,000	1.77	2.563	144.8
May	129,000	700,000	7,681,000	—	229,000	8,281,000	471,000	1.53	0.840	54.9
June	—	337,000	—	3,080,000	—	3,417,000	194,000	3.46	0.335	9.7
July	—	90,000	—	—	1,148,000	—1,058,000	—60,000	2.04	—0.107	—5.3
August	—	206,000	—	2,297,000	—	2,503,000	142,000	5.73	0.254	4.4
September	—	779,000	20,914,000	—	3,632,000	18,061,000	1,027,000	9.24	1.776	19.2
October	—	1,264,000	26,497,000	1,910,000	—	29,645,000	1,686,000	7.81	3.007	38.5
November	—	2,230,000	52,033,000	—	6,757,000	47,500,000	2,702,000	5.24	4.664	89.0
December	—	1,000,000	16,029,000	2,116,000	—	19,145,000	1,089,000	1.90	1.943	102.2
Total	11,000	921,000	15,259,000	1,466,000	—	17,654,000	1,004,000	51.63	21.149	41.0
Average for year										

¹Not including the Watersheds of Dudley and Dug ponds.
²Wasted cleaning aqueduct.

TABLE NO. 6 — Sources from which and Periods during which Water has been drawn for the Supply of the Metropolitan Water District

From Wachusett Reservoir into the Wachusett Aqueduct

MONTH	Number of Days during which Water was Flowing	ACTUAL TIME		Million ¹ Gallons Drawn
		Hours	Minutes	
January	23	193	20	2,696.5
February	15	125	44	1,380.5
March	24	230	10	3,023.4
April	18	187	25	2,681.3
May	25	213	26	3,136.2
June	26	283	41	4,149.8
July	25	263	15	3,789.6
August	27	278	45	4,057.2
September	18	194	—	2,837.6
October	14	133	20	1,945.0
November	4	26	17	334.5
December	26	251	34	3,693.9
Totals	245	99.206 days		33,725.5

¹Including quantity supplied Westborough State Hospital.

From Sudbury Reservoir through the Weston Aqueduct to Weston Reservoir

MONTH	Number of Days during which Water was Flowing	ACTUAL TIME		Million Gallons Drawn
		Hours	Minutes	
January	31	625	30	3,053.9
February	29	594	—	2,895.1
March	31	633	30	3,077.4
April	30	608	24	2,949.3
May	31	625	45	2,961.9
June	30	609	30	2,878.5
July	31	621	37	2,930.4
August	31	623	30	2,950.7
September	30	600	24	2,853.1
October	31	630	—	3,011.5
November	30	669	—	3,212.4
December	31	732	10	3,448.9
Totals	366	315.556 days		36,223.1

From Framingham Reservoir No. 3 through the Sudbury Aqueduct to Chestnut Hill Reservoir

MONTH	Number of Days during which Water was Flowing	ACTUAL TIME		Million Gallons Drawn
		Hours	Minutes	
January	31	744	—	840.3
February	29	696	—	710.8
March	31	744	—	654.7
April	30	719	—	550.7
May	31	744	—	933.6
June	30	720	—	1,070.6
July	31	744	—	1,198.7
August	31	744	—	952.7
September	30	721	—	766.8
October	31	713	—	638.1
November	30	696	45	313.0
December	31	744	—	337.7
Totals	366	363.740 days		8,967.7

TABLE NO. 7 — *Average Daily Quantity of Water flowing through Aqueducts in 1932 by Months*

MONTH	Wachusett Aqueduct into Sudbury Reservoir (Gallons)	Weston Aqueduct into Metropolitan District (Gallons)	Sudbury Aqueduct into Chestnut Hill Reservoir (Gallons)	Cochituate Aqueduct into Chestnut Hill Reservoir (Gallons)
January	86,826,000	98,513,000	27,106,000	—
February	47,452,000	99,831,000	24,510,000	—
March	97,377,000	99,271,000	21,119,000	—
April	89,338,000	98,447,000	18,382,000	—
May	100,981,000	95,545,000	30,116,000	—
June	138,133,000	95,950,000	35,687,000	—
July	122,058,000	94,529,000	38,668,000	—
August	130,681,000	95,184,000	30,732,000	—
September	94,256,000	94,971,000	25,525,000	—
October	62,542,000	97,145,000	20,584,000	—
November	10,947,000	107,080,000	10,433,000	—
December	118,948,000	111,255,000	10,894,000	—
Average.	91,963,000	98,970,000	24,502,000	—

TABLE No. 8 — (Meter Basis.) Average Daily Consumption of Water by Districts in the Cities and Towns supplied by the Metropolitan Water Works in 1932

MONTH	LOW SERVICE	SOUTHERN HIGH SERVICE	SOUTHERN INTERMEDIATE HIGH SERVICE	NORTHERN HIGH SERVICE	SOUTHERN EXTRA HIGH SERVICE	NORTHERN EXTRA HIGH SERVICE	Total District Supplied (Gallons)	Estimated Population	Consumption per Inhabitant (Gallons)
	Portions of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown (Gallons)	Quincy and Portions of Boston, Milton and Watertown (Gallons)	Portions of Belmont and Watertown (Gallons)	Melrose, Nahant, Revere, Stoneham, Swampscott and Winthrop and Portions of Boston, Chelsea, Everett, Malden, Medford and Somerville (Gallons)	Portions of Boston and Milton (Gallons)	Lexington and Portions of Arlington and Belmont (Gallons)			
January	69,914,000	45,788,000	1,356,400	12,190,200	1,736,900	1,516,000	132,501,600	1,414,030	94
February	68,800,100	44,504,200	1,344,200	11,945,300	1,720,000	1,469,200	129,783,000	1,415,390	92
March	67,168,300	43,383,100	1,356,800	11,694,500	1,607,800	1,492,800	126,703,300	1,416,740	89
April	64,521,700	42,090,400	1,394,300	11,604,100	1,605,300	1,583,200	122,799,000	1,418,100	87
May	65,198,800	43,431,700	1,640,500	12,905,000	1,836,500	2,008,400	127,020,900	1,419,460	89
June	66,747,600	45,078,500	1,773,600	13,609,600	1,906,200	2,213,000	131,328,500	1,420,810	92
July	66,837,300	46,283,300	1,830,700	14,422,900	2,025,100	2,330,600	133,729,900	1,422,170	94
August	66,128,800	46,134,400	1,483,800	13,267,100	1,627,900	1,658,100	130,300,100	1,423,530	92
September	64,530,700	45,212,300	1,493,800	12,359,900	1,575,600	1,600,800	126,773,100	1,424,880	89
October	62,813,100	45,371,900	1,448,000	12,040,400	1,698,700	1,482,800	124,854,900	1,426,240	88
November	62,343,800	45,072,000	1,394,600	11,807,600	1,594,500	1,413,600	123,626,100	1,427,600	87
December	64,923,900	45,267,300	1,414,500	11,805,200	1,567,400	1,396,400	126,374,700	1,428,950	88
For the year	65,825,100	44,807,900	1,494,900	12,475,200	1,708,800	1,681,400	127,993,300	1,422,170	90

TABLE No. 9 — (Meter Basis.) Average Daily Consumption of Water in Cities and Towns supplied by the Metropolitan Water Works in 1932

City or town.	ARLINGTON		BELMONT		BOSTON		CHELSEA		EVERETT		LEXINGTON		MALDEN	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
Population . .	40,390		24,240		782,760		47,050		50,840		10,130		61,010	
MONTH	GALLONS		GALLONS		GALLONS		GALLONS		GALLONS		GALLONS		GALLONS	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January . .	1,779,800	45	1,198,900	51	90,062,200	115	3,426,100	73	4,645,000	92	660,600	66	3,682,300	61
February . .	1,727,700	44	1,186,800	50	87,277,800	112	3,459,700	74	4,709,600	93	637,400	64	3,602,700	60
March . .	1,745,100	44	1,203,900	50	84,726,000	108	3,507,600	75	4,500,900	89	653,600	65	3,534,300	58
April . .	1,746,600	44	1,254,700	52	82,063,100	105	3,218,000	69	4,146,000	82	707,900	70	3,531,600	58
May . .	2,240,000	56	1,603,000	67	82,781,000	106	3,273,700	70	4,311,400	85	740,100	73	3,846,300	63
June . .	2,455,200	61	1,807,600	75	84,979,700	109	3,500,100	74	4,309,800	85	815,500	81	3,863,100	63
July . .	2,561,700	63	1,919,600	79	86,381,500	110	3,521,000	75	4,270,000	84	893,900	88	3,784,400	62
August . .	1,879,700	46	1,376,700	57	86,641,000	111	3,553,100	75	4,353,700	85	636,800	63	3,557,900	58
September . .	1,839,200	45	1,331,900	55	84,713,000	108	3,633,000	77	4,254,800	83	619,000	61	3,430,300	56
October . .	1,719,700	42	1,275,700	52	83,554,500	107	3,684,500	78	4,326,300	85	589,000	58	3,379,300	55
November . .	1,692,000	41	1,291,900	53	83,030,200	106	3,454,300	73	4,255,800	83	570,000	56	3,387,000	55
December . .	1,722,500	42	1,317,900	53	85,849,900	110	3,396,800	72	4,303,600	84	565,800	55	3,418,800	56
For the year . .	1,926,800	48	1,398,300	58	85,176,300	109	3,469,200	74	4,365,000	86	674,300	67	3,585,100	59

TABLE No 9. — (Meter Basis.) Average Daily Consumption of Water in Cities and Towns, etc. — Continued.

City or Town.	MEDFORD		MELROSE		MILTON		NAHANT		QUINCY		REVERE	
Population	64,590		24,390		17,970		1,680		76,630		37,480	
	GALLONS		GALLONS		GALLONS		GALLONS		GALLONS		GALLONS	
Month	MEDFORD		MELROSE		MILTON		NAHANT		QUINCY		REVERE	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	3,332,900	52	1,482,300	61	844,400	48	156,100	93	5,103,700	67	2,064,800	56
February	3,308,000	52	1,465,000	61	839,700	47	152,800	91	5,087,200	67	1,991,400	54
March	3,370,200	53	1,460,300	60	854,500	48	150,800	90	5,061,100	67	1,949,200	52
April	3,211,500	50	1,498,100	62	837,800	47	128,400	76	4,926,600	65	1,958,200	53
May	3,398,600	53	1,659,500	68	987,100	55	234,300	139	5,237,600	69	2,121,400	57
June	3,587,200	56	1,709,600	70	999,500	56	311,600	185	5,476,800	72	2,294,000	61
July	3,694,000	57	1,825,100	75	1,077,700	60	387,300	231	5,742,000	75	2,621,300	70
August	3,328,800	51	1,643,100	67	868,300	48	309,300	184	5,464,200	71	2,610,500	70
September	3,371,500	52	1,583,800	65	864,900	48	232,800	139	5,222,400	68	2,199,800	58
October	3,408,900	52	1,575,400	64	851,900	47	140,700	84	5,240,700	68	1,997,500	53
November	3,213,700	49	1,480,800	60	853,000	47	116,500	69	5,056,300	65	2,064,000	55
December	3,210,500	49	1,539,100	63	835,400	46	104,900	62	5,099,000	66	2,033,700	54
For the year	3,370,300	52	1,577,500	65	893,200	50	202,400	120	5,227,900	68	2,160,000	58

TABLE No. 9 — (Meter Basis.) Average Daily Consumption of Water in Cities and Towns, etc. — Concluded.

City or town	SOMERVILLE		STONEHAM		SWAMPSCOTT		WATERTOWN		WINTHROP		METROPOLITAN DISTRICT	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
Population	106,490		10,390		10,850		38,030		17,250		1,422,170	
	GALLONS		GALLONS		GALLONS		GALLONS		GALLONS		GALLONS	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	9,665,900	91	662,600	64	613,900	57	1,971,400	53	1,148,700	67	132,501,600	94
February	9,831,400	93	650,200	63	624,700	58	2,094,400	56	1,136,500	66	129,783,000	92
March	9,596,500	90	650,000	63	616,600	57	2,053,600	55	1,069,100	62	126,703,300	89
April	9,181,600	86	657,500	63	600,700	56	2,001,300	53	1,129,400	66	122,799,000	87
May	9,496,200	89	750,600	72	931,000	86	2,194,600	58	1,214,500	71	127,020,900	89
June	9,630,900	91	767,600	74	1,119,700	103	2,392,000	63	1,308,600	76	131,328,500	92
July	9,119,700	86	784,200	75	1,148,800	106	2,482,500	65	1,515,200	88	133,729,900	94
August	8,681,500	81	741,300	71	924,700	85	2,336,900	61	1,392,600	81	130,300,100	92
September	8,419,100	79	719,000	69	817,600	75	2,302,500	60	1,218,500	71	126,773,100	89
October	8,345,700	78	697,500	67	663,500	61	2,297,100	60	1,107,000	64	124,854,900	88
November	8,651,100	81	737,000	71	560,600	51	2,097,800	55	1,114,100	64	123,626,100	87
December	8,532,800	80	768,800	74	612,000	56	1,993,100	52	1,070,100	62	126,374,700	88
For the year	9,093,400	85	715,800	69	770,200	71	2,185,100	57	1,202,500	70	127,993,300	90

TABLE No 10. — Chemical Examinations of Water from the Wachusett Reservoir, Clinton — 1932
[Parts per 1,000,000]

DATE OF COLLECTION	APPEARANCE		ODOR		RESIDUE ON EVAPORATION		AMMONIA			Chlorine	Hardness
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	ALBUMINOID			
								Total	Dissolved			Suspended
Jan. 5 . . .	V. slight.	V. slight.	V. faintly vegetable	V. faintly vegetable.	36.5	12.0	.008	.084	.064	.020	14.3
Jan. 19 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.5	12.0	.014	.080	.062	.018	15.6
Feb. 2 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.0	18.0	.006	.078	.060	.018	15.6
Feb. 16 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	36.5	15.0	.004	.142	.104	.038	15.6
Mar. 8 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.0	10.0	.006	.082	.064	.022	17.0
Mar. 22 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	48.5	17.0	.006	.072	.058	.014	16.0
Apr. 5 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	38.0	10.5	.008	.106	.074	.032	14.0
Apr. 18 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	36.0	17.0	.008	.130	.096	.034	13.0
May 3 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	39.0	15.0	.004	.048	.038	.010	14.0
May 17 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	38.0	16.5	.022	.084	.066	.018	13.0
June 7 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	34.0	10.0	.010	.104	.074	.030	14.0
June 21 . . .	None	None	V. faintly vegetable.	Faintly vegetable.	39.5	15.0	.012	.100	.076	.024	13.0
July 5 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	32.5	15.0	.018	.124	.086	.038	13.0
July 19 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	34.5	13.5	.026	.136	.082	.054	13.0
Aug. 2 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	35.0	12.0	.032	.140	.112	.028	14.0
Aug. 16 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	36.0	12.0	.006	.132	.090	.042	13.0
Sept. 6 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	31.0	10.0	.004	.082	.052	.030	14.0
Sept. 20 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	35.5	12.5	.016	.088	.054	.034	13.0
Oct. 4 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.0	14.0	.008	.126	.056	.070	11.0
Oct. 18 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	28.0	10.0	.018	.152	.098	.054	10.0
Nov. 1 . . .	V. slight.	V. slight.	V. faintly vegetable.	Dist. unpleasant.	34.5	10.0	.052	.080	.060	.020	13.0
Dec. 6 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	39.0	15.5	.008	.084	.062	.022	14.0
Dec. 21 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	33.5	10.0	.002	.050	.042	.008	16.0
Average	. . . . .	. . . . .	. . . . .	. . . . .	36.3	13.2	.013	.100	.071	.029	13.9

TABLE No. 11 — Chemical Examinations of Water from the Sudbury Reservoir — 1932
[Parts per 1,000,000]

DATE OF COLLECTION	APPEARANCE		ODOR		RESIDUE ON EVAPORATION		AMMONIA			Chlorine	Hardness	
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	ALBUMINOID				
								Total	Dissolved			Suspended
Jan. 5	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.0	11.0	.010	.110	.074	.036	15.6	
Feb. 2	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	39.0	12.0	.004	.120	.072	.048	20.8	
Mar. 8	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	46.5	10.5	.006	.088	.062	.026	22.0	
Apr. 5	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	47.0	20.0	.008	.082	.062	.020	18.0	
May 3	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	52.0	19.0	.012	.102	.070	.032	21.0	
June 7	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	41.5	10.5	.028	.112	.090	.022	18.0	
July 5	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	37.0	10.0	.012	.184	.104	.080	16.0	
Aug. 2	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	38.5	16.5	.008	.114	.082	.032	16.0	
Sept. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	42.0	11.0	.018	.046	.034	.012	16.0	
Oct. 4	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	35.5	13.0	.012	.122	.072	.050	11.0	
Nov. 1	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	37.0	12.0	.038	.130	.084	.046	18.0	
Dec. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	52.0	18.0	.028	.130	.088	.042	21.0	
Average . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	42.1	13.6	.015	.112	.075	.037	17.8

TABLE No. 12 — Chemical Examinations of Water from Spot Pond, Stoneham — 1932
[Parts per 1,000,000]

Jan.	4	.	V. slight.	Faintly vegetable.	Faintly unpleasant.	40.0	13.5	.008	.128	.092	.036	4.3	16.9
Feb.	1	.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	59.0	14.0	.006	.120	.082	.038	3.6	11.1
Mar.	7	.	V. slight.	V. faintly vegetable.	Faintly fishy.	54.5	20.0	.158	.096	.068	.028	4.3	18.0
Apr.	4	.	V. slight.	V. faintly vegetable.	Faintly vegetable.	43.0	15.5	.014	.100	.060	.040	4.0	17.0
May	2	.	V. slight.	V. faintly vegetable.	Faintly vegetable.	42.0	15.0	.016	.110	.062	.048	3.6	16.0
June	6	.	V. slight.	Faintly vegetable.	Faintly vegetable.	41.5	15.0	.016	.104	.078	.026	4.4	16.0
July	5	.	V. slight.	V. faintly vegetable.	Faintly vegetable.	39.0	11.0	.002	.112	.056	.056	3.8	17.0
Aug.	1	.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	39.0	15.0	.028	.088	.064	.024	3.8	16.0
Sept.	6	.	V. slight.	V. faintly vegetable.	Faintly vegetable.	40.5	13.5	.008	.072	.054	.018	3.5	11.0
Oct.	3	.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	32.5	11.5	.008	.108	.066	.042	3.8	13.0
Nov.	1	.	V. slight.	V. faintly vegetable.	Faintly vegetable.	35.0	11.5	.004	.124	.052	.072	3.8	17.0
Dec.	5	.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	45.5	15.5	.010	.088	.058	.030	4.4	21.0
Average			.	.	.	42.6	14.3	.023	.104	.066	.038	3.9	15.8

TABLE No. 13 — Chemical Examinations of Water from Lake Cochituate — 1932
[Parts per 1,000,000]

DATE OF COLLECTION	APPEARANCE		ODOR		RESIDUE ON EVAPORATION		AMMONIA			Chlorine	Hardness	
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	ALBUMINOID				
								Total	Dissolved			Suspended
Jan. 6 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	85.0	20.0	.092	.146	.114	.032	9.6	36.4
Feb. 3 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	81.5	23.5	.070	.132	.086	.046	9.5	35.1
Mar. 9 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	83.5	22.0	.084	.158	.116	.042	9.8	35.0
Apr. 6 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	83.0	22.0	.180	.164	.108	.056	9.7	34.0
May . . .	—	—	—	—	—	—	—	—	—	—	—	—
June 7 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	88.5	23.0	.090	.140	.104	.036	10.0	36.0
July . . .	—	—	—	—	—	—	—	—	—	—	—	—
Aug. 3 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	88.0	26.0	.026	.130	.116	.114	9.8	35.0
Sept. . . .	—	—	—	—	—	—	—	—	—	—	—	—
Oct. 5 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	83.5	21.5	.012	.146	.122	.024	9.8	35.0
Nov. 2 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	85.0	24.5	.082	.116	.098	.018	9.8	35.0
Dec. 7 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	88.5	22.0	.144	.140	.116	.024	10.4	36.0
Average . . .	.....	.....	.....	.....	85.2	22.7	.087	.141	.109	.044	9.8	35.3

TABLE No. 14 — Chemical Examinations of Water from a tap at the State House, Boston — 1932
[Parts per 1,000,000]

Jan. 4 . . .	V. slight.	V. slight.	Faintly vegetable.	Faintly vegetable.	35.5	10.0	.012	.110	.082	.028	4.0	15.6
Feb. 1 . . .	V. slight.	V. slight.	None.	V. faintly vegetable.	41.0	18.0	.004	.088	.064	.024	3.5	14.3
Mar. 7 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	55.5	23.5	.008	.116	.076	.040	4.2	18.0
Apr. 4 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	43.5	14.5	.008	.078	.072	.006	3.8	16.0
May 2 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	49.0	18.5	.008	.102	.088	.014	3.8	20.0
June 6 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	42.5	15.0	.012	.126	.078	.048	4.2	18.0
July . . .	—	—	—	—	—	—	—	—	—	—	—	—
Aug. 3 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	45.0	13.5	.008	.092	.068	.024	3.8	16.0
Sept. 7 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	36.0	13.0	.002	.072	.044	.028	3.5	16.0
Oct. 4 . . .	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	44.0	18.5	.004	.116	.078	.038	3.6	11.0
Nov. 24 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	39.0	19.0	.008	.112	.090	.022	3.6	14.0
Dec. 5 . . .	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	48.0	13.0	.008	.108	.080	.028	4.4	17.0
Average . . .	.....	.....	.....	.....	43.5	16.0	.007	.102	.075	.027	3.9	16.0

TABLE No .15. — *Chemical Examinations of Water from a Faucet in Boston, 1898–1932*

[Parts per 1,000,000]

YEAR	COLOR	RESIDUE ON EVAPORATION		AMMONIA				Chlorine	Oxygen Consumed	Hardness
	Platinum Standard	Total	Loss on Ignition	Free	ALBUMINOID					
					Total	Dis-solved	Sus-pended			
1898	40	41.9	16.0	.008	.152	.136	.016	2.9	4.4	14
1899	28	37.0	13.0	.006	.136	.122	.014	2.4	3.5	11
1900	29	38.0	12.0	.012	.157	.139	.018	2.5	3.8	13
1901	29	44.3	16.4	.013	.158	.142	.016	3.0	4.2	17
1902	30	39.3	15.6	.016	.139	.119	.020	2.9	4.0	13
1903	29	39.8	15.0	.013	.125	.110	.015	3.0	3.9	15
1904	23	39.3	15.9	.023	.139	.121	.018	3.4	3.7	15
1905	24	38.6	15.9	.020	.145	.124	.021	3.5	3.5	14
1906	24	38.6	13.9	.018	.159	.134	.025	3.4	3.6	13
1907	22	38.3	14.0	.013	.129	.109	.020	3.3	3.2	13
1908	19	35.0	13.5	.011	.115	.092	.024	3.3	2.6	12
1909	18	34.6	14.3	.011	.128	.103	.025	2.8	2.5	13
1910	14	30.5	12.4	.013	.118	.102	.016	2.8	2.2	11
1911	25	41.8	16.6	.015	.156	.128	.029	3.8	3.3	14
1912	17	38.6	12.3	.018	.154	.119	.034	3.6	2.9	17
1913	13	39.6	11.5	.014	.150	.120	.026	3.5	2.6	15
1914	14	41.2	11.9	.014	.138	.116	.022	3.9	2.5	14
1915	16	37.3	10.4	.015	.157	.134	.023	3.8	2.5	14
1916	18	45.3	18.5	.013	.133	.107	.026	3.6	—	14
1917	15	44.5	16.8	.015	.142	.124	.018	3.3	—	13
1918	18	38.9	14.5	.019	.154	.128	.026	2.9	—	14
1919	20	42.8	14.1	.010	.130	.108	.022	3.6	—	15
1920	17	42.3	13.5	.012	.112	.097	.014	3.3	—	15
1921	13	38.0	13.9	.006	.104	.089	.015	2.5	—	14
1922	16	39.8	15.5	.011	.097	.080	.017	3.0	—	18
1923	15	39.0	14.5	.011	.100	.090	.010	2.6	—	15
1924	12	41.0	16.0	.011	.109	.084	.025	2.8	—	15
1925	9	39.8	16.2	.013	.109	.093	.016	2.9	—	15
1926	10	41.8	16.8	.015	.115	.092	.023	3.2	—	15
1927	22	44.7	16.2	.013	.111	.101	.018	3.4	—	19
1928	27	44.3	17.2	.011	.124	.106	.018	3.7	—	15
1929	21	42.6	17.1	.007	.106	.074	.032	3.0	—	13
1930	16	40.7	13.4	.012	.071	.055	.016	3.4	—	13
1931	24	48.8	16.4	.013	.097	.072	.025	4.5	—	20
1932	19	43.5	16.0	.007	.102	.075	.027	3.9	—	16

TABLE NO. 16. — *Number of Bacteria per Cubic Centimeter in Water from Various Parts of the Metropolitan Water Works, 1898–1932. (Averages of Weekly Determinations.)*

YEAR						CHESTNUT HILL RESERVOIR			SOUTHERN SERVICE TAPS	
						Sudbury Aqueduct Terminal Chamber	Cochituate Aqueduct	Effluent Gate-house No. 2	Low Service 182 Boylston Street	High Service 20 Somerset Street
1898	.	.	.	.	.	207	145	111	96	—
1899	.	.	.	.	.	224	104	217	117	123
1900	.	.	.	.	.	248	113	256	188	181
1901	.	.	.	.	.	225	149	169	162	168
1902	.	.	.	.	.	203	168	121	164	246
1903	.	.	.	.	.	76	120	96	126	243
1904	.	.	.	.	.	347	172	220	176	355
1905	.	.	.	.	.	495	396	489	231	442
1906	.	.	.	.	.	231	145	246	154	261
1907	.	.	.	.	.	147	246	118	130	176
1908	.	.	.	.	.	162	138	137	136	148
1909	.	.	.	.	.	198	229	119	150	195
1910	.	.	.	.	.	216	—	180	178	213
1911	.	.	.	.	.	205	204	151	175	197
1912	.	.	.	.	.	429	450	227	249	259
1913	.	.	.	.	.	123	243	157	119	140
1914	.	.	.	.	.	288	—	252	174	220
1915	.	.	.	.	.	163	—	128	117	134
1916	.	.	.	.	.	128	—	85	102	105
1917	.	.	.	.	.	178	112	119	119	141
1918	.	.	.	.	.	1,163	168	705	317	544
1919	.	.	.	.	.	92	85	100	70	84
1920	.	.	.	.	.	148	86	108	113	112
1921	.	.	.	.	.	103	—	83	92	92
1922	.	.	.	.	.	163	—	153	160	172
1923	.	.	.	.	.	229	—	178	217	230
1924	.	.	.	.	.	137	—	96	150	160
1925	.	.	.	.	.	144	251	120	155	174
1926	.	.	.	.	.	167	—	118	130	137
1927	.	.	.	.	.	119	185	70	81	101
1928	.	.	.	.	.	144	32	86	106	106
1929	.	.	.	.	.	128	—	84	130	144
1930	.	.	.	.	.	107	—	66	105	123
1931	.	.	.	.	.	82 ¹	4 ¹	43	80	101
1932	.	.	.	.	.	121 ¹	—	63	123	147

¹After the water was sterilized with chlorine.

TABLE No. 17. — Colors of Water from Various Parts of the Metropolitan Water Works in 1932. (Averages of Weekly Determinations.)
[Platinum Standard]

MONTH	WACHUSETT RESERVOIR						FRAM- INGHAM RESER- VOIR No 3.	LAKE COCHITUATE			CHESTNUT HILL RESERVOIR			SPOT POND	FELLS RESER- VOIR	NORTHERN SERVICE		SOUTHERN SERVICE	
	Surface	Mid-depth	Bottom	Worcester St. Bridge	Quinapoxet River	Stillwater River		Surface	Mid-depth	Bottom	Inlet Sudbury Aqueduct	Inlet Cochituate Aqueduct	Effluent Gate House No. 2	Mid-depth	Effluent Gate house	Tap at Glenwood Yard, Medford (Low Service)	Tap at Glenwood Yard, Medford (High Service)	Tap at 182 Boylston Street, Boston (Low Service)	Tap at 20 Somerset Street, Boston (High Service)
January.	17	17	17	43	45	34	15	15	-	14	16	-	15	14	13	18	13	18	18
February	16	16	16	34	38	29	17	16	-	-	15	-	12	10	10	16	10	16	16
March	16	-	16	28	34	28	19	19	18	16	16	-	14	10	10	18	10	18	17
April	18	18	18	37	41	32	21	20	20	19	18	-	14	9	8	19	9	18	18
May	19	20	19	34	47	40	21	22	22	21	19	-	15	7	7	19	7	19	19
June	19	19	19	24	41	32	20	21	21	20	18	-	16	7	7	18	9	20	19
July	17	18	18	20	34	28	18	14	15	19	16	-	14	9	10	17	11	18	19
August	14	15	16	16	31	26	12	12	15	47	15	-	13	10	10	14	11	14	15
September	14	14	14	15	37	36	14	12	17	45	15	-	13	10	10	14	10	15	15
October	14	14	14	18	23	42	20	15	15	100	19	-	14	10	10	19	10	19	19
November	16	14	15	30	62	46	22	24	24	62	22	-	14	11	11	19	11	20	20
December	18	18	16	36	33	31	38	29	28	28	27	-	18	12	12	35	13	35	33
Mean	17	17	17	28	39	34	20	19	18	40	18	-	14	10	10	19	10	19	19

TABLE No. 18. — *Temperatures of Water from Various Parts of the Metropolitan Water Works in 1932.* (*Averages of Weekly Determinations.*)

[The temperatures are taken at the same places and times as the samples for microscopical examination, the depth at place of observation from high water mark.
[Degrees Fahrenheit]

MONTH	WACHUSETT ¹ RESERVOIR DEPTH AT PLACE OF OBSERVATION 107 FEET			SUDBURY ¹ RESERVOIR DEPTH AT PLACE OF OBSERVATION 54.5 FEET			WACHU- SETT ACUE- DUCT			FRAMINGHAM ¹ RESERVOIR NO. 3 DEPTH AT PLACE OF OBSERVATION 20.5 FEET			LAKE COCHITUATE ¹ DEPTH AT PLACE OF OBSERVATION 62.0 FEET			CHEST- NUT HILL RESER- VOIR			SPOT POND DEPTH AT PLACE OF OBSERVATION 28.0 FEET			NORTHERN SERVICE		SOUTHERN SERVICE	
	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	End of Open Channel	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	Effluent Gate House No. 2	Surface	Mid-depth	Bottom	Tap at Glenwood Yard, Medford (Low Service)	Tap at Glenwood Yard, Medford (High Service)	Tap at 182 Boylston Street, Boston (Low Service)	Tap at 20 Somerset Street, Boston (High Service)	
January .	35.2	35.1	34.8	36.0	—	—	35.8	36.7	37.0	—	37.6	37.6	37.6	37.6	35.0	34.7	36.9	36.0	35.0	34.7	40.0	42.3	39.2	39.6	
February .	34.0	33.6	—	33.8	35.5	—	35.3	34.1	34.3	35.3	—	—	—	35.6	34.3	34.3	34.5	—	34.3	34.3	39.8	40.6	37.7	38.1	
March .	33.9	—	34.2	35.2	—	—	34.4	36.3	37.2	—	35.7	35.7	35.5	35.7	36.3	34.9	36.6	35.0	36.3	34.9	40.1	39.6	39.4	39.4	
April .	40.8	43.1	39.0	44.7	42.8	48.5	41.5	45.1	46.8	44.0	42.9	42.9	42.9	44.3	41.8	45.5	45.7	44.3	41.8	45.5	47.6	44.8	46.4	46.6	
May .	52.3	49.9	48.5	58.6	56.0	55.5	51.4	59.2	59.1	56.6	50.4	48.1	48.1	57.4	57.0	53.0	57.5	56.0	57.0	53.0	57.3	52.0	57.7	58.4	
June .	66.7	60.2	56.9	67.8	62.8	62.8	58.6	67.6	67.8	64.6	52.8	50.5	50.5	68.4	66.5	63.3	66.9	66.8	66.5	63.3	66.1	59.7	66.6	67.8	
July .	71.5	66.0	61.0	72.5	69.5	66.5	62.5	71.8	70.9	71.8	51.4	51.4	51.4	73.1	70.8	69.5	71.8	72.1	70.8	69.5	70.0	66.1	72.5	72.6	
August .	74.4	65.2	63.0	75.3	72.0	71.3	63.2	74.6	74.1	73.6	55.1	55.1	55.1	75.2	73.8	74.0	73.4	74.4	73.8	74.0	73.0	68.4	74.6	75.3	
September	65.6	65.2	57.4	66.0	67.5	67.0	61.5	65.5	65.2	65.3	54.0	54.0	54.0	66.4	66.5	67.0	66.2	66.8	66.5	67.0	69.3	66.5	68.6	68.7	
October .	57.0	57.8	54.3	56.8	56.8	—	55.5	54.9	52.5	—	49.7	49.7	49.7	57.3	56.0	58.5	57.5	57.3	56.0	58.5	62.3	60.5	59.9	59.7	
November	51.5	49.0	50.1	48.1	48.1	47.5	44.5	43.5	46.2	46.7	46.5	46.5	46.5	58.4	46.0	47.6	46.7	47.3	46.0	47.6	54.3	52.9	51.3	51.2	
December	40.3	38.6	43.2	36.5	—	—	38.1	36.0	—	—	40.0	40.0	40.0	38.3	36.4	37.5	37.4	38.3	36.4	37.5	45.5	42.5	41.3	41.1	
Mean .	51.9	51.2	49.3	52.6	56.8	59.9	48.5	52.1	53.7	57.2	46.5	46.5	46.5	54.0	51.7	51.7	52.6	54.0	51.7	51.7	55.4	53.0	54.6	54.9	

¹Surface temperatures are averages of weekly determinations. Mid-depth and bottom temperatures are averages of biweekly determinations.

TABLE No. 19. — Length of Metropolitan Water Works, Main Lines and Connections and Number of Valves set in Same.
Dec. 31, 1932

[Pipes are of cast iron unless otherwise noted.]

DIAMETER OF PIPES IN INCHES																				Total
60	56	54	48	42	40	38	36	30	24	20	16	14	12	10	8	6	4			
Total length owned and operated Dec. 31, 1931 (feet)	115,887	17,569	13,486	217,687	10,869	6,887	7,274	63,853	78,045	101,548	115,004	78,073	26	29,562	3,867	1,959	1,279	58	862,933	
Gate valves in same	20	—	5	59	3	3	—	71	50	71	88	136	1	145	22	29	26	2	731	
Air valves in same	163	8	12	132	6	5	6	48	47	60	76	41	—	10	1	—	—	—	615	
Length laid or relaid during 1932 (feet)	9,388	—	—	41	—	—	—	29	—	5	44	44	—	46	15	3	—	—	9,615	
Gate valves in same	4	—	—	—	—	—	—	—	—	—	3	4	—	2	—	—	—	—	13	
Air valves in same	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	
Length abandoned during 1932 (feet)	—	—	—	—	—	—	—	—	—	5	24	—	—	5	—	2	—	—	36	
Gate valves in same	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	
Air valves in same	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Length owned and operated Dec. 31, 1932 (ft.)	125,275 ¹	17,569 ²	13,486 ²	217,728 ³	10,869 ⁴	6,887	7,274 ²	63,882 ⁵	78,045 ⁶	101,548 ⁷	115,024 ⁸	78,117 ⁹	26	29,603 ¹⁰	3,882	1,960	1,279	58	872,512 ¹¹	
Gate valves in same	24	—	5	59	3	3	—	71	50	71	90	140	1	147	22	29	26	2	743	
Air valves in same	181	8	12	132	6	5	6	48	47	60	76	41	—	10	1	—	—	—	633	

¹Includes 2,035 feet of 76-inch concrete-lined pressure tunnel; 363 feet of 76-inch mortar-lined and concrete-covered steel pipe; 21 feet of 76-inch cast-iron pipe; 85 feet of 60-inch concrete-covered steel pipe, and 77,720 feet of 60-inch steel pipe.

²Steel pipe.

³Includes 2,087 feet of steel pipe.

⁴Includes 1,059 feet of steel pipe.

⁵Includes 236 feet of steel pipe.

⁶Includes 15,512 feet of mortar-lined and covered wrought-iron pipe; 7,213 feet of cement-lined cast-iron pipe, and 19,101 feet of steel pipe.

⁷Includes 55 feet of steel pipe.

⁸Includes 1,319 feet of cement-lined cast-iron pipe.

⁹Includes 1,795 feet of cement-lined cast-iron pipe.

¹⁰Includes 627 feet of cement-lined cast-iron pipe.

¹¹165.25 miles.

TABLE No. 20. — Length of Metropolitan Water Works Hydrant, Blow-off and Drain Pipes, Dec. 31, 1932.

[All pipes are of cast iron.]

	DIAMETER OF PIPES IN INCHES								Total
	24	20	16	12	10	8	6	4	
Total length in use Dec. 31, 1931 (feet)	352	292	4,016	7,318	220	1,314	4,485	1,663	19,660
Valves in same	—	—	54	121	2	20	108	48	353
Total laid or relaid in 1932 (feet)	—	—	90	146	—	3	48	—	287
Valves in same	—	—	3	5	—	—	3	—	11
Length abandoned in 1932 (feet)	—	—	—	5	—	2	9	—	16
Valves in same	—	—	—	—	—	—	—	—	—
Total length in use Dec. 31, 1932 (feet)	352	292	4,106	7,459	220	1,315	4,524	1,663	19,931 ¹
Valves in same	—	—	57	126	2	20	111	48	364

13.77 miles.

TABLE No. 21. — Length of Metropolitan Water Works Main Lines and Connections and Water Pipes, Four Inches in Diameter and Larger, in the Several Cities and Towns in the Metropolitan Water District, Dec. 31, 1932

By Whom Owned	INCHES																	TOTALS			
	60	56	54	48	42	40	38	36	30	24	20	18	16	14	12	10	8	6	4	Feet	Miles
Met. Water Wks	125,275	17,569	13,486	217,728	10,869	6,887	7,274	63,882	78,045	101,548	115,024	—	78,117	26	29,603	3,882	1,960	1,279	58	872,512	165.25
Arlington .	—	—	—	—	—	—	—	—	—	—	—	—	2,388	—	43,287	36,982	94,216	255,966	2,609	435,448	82.47
Belmont .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11,588	27,971	65,129	212,852	269	317,809	60.19
Boston .	—	—	—	21,655	15,980	15,352	—	43,830	90,643	84,634	86,601	—	304,792	4,966	1,696,886	451,829	1,093,791	1,064,557	77,062	5,052,578	956.93
Brookline .	—	—	—	—	—	—	—	—	—	10,007	27,292	—	20,527	12,880	63,985	85,759	103,862	276,738	31	601,081	113.84
Chelsea .	—	—	—	—	—	—	—	—	—	—	4,108	—	5,176	—	5,479	40,251	34,521	152,773	6,315	248,623	47.09
Everett .	—	—	—	—	—	—	—	—	—	2,484	2,900	—	6,948	6,619	8,306	47,749	34,332	175,937	25,476	310,751	58.85
Lexington .	—	—	—	—	—	—	—	—	—	—	2,900	—	2,610	—	39,084	14,224	65,647	190,750	27,890	340,205	64.43
Malden .	—	—	—	—	—	—	—	—	—	—	—	—	8,891	11,121	97,909	38,474	117,993	237,412	46,348	558,148	105.71
Medford .	—	—	—	—	—	—	—	—	—	—	673	—	6,775	9,598	42,071	47,345	135,138	294,107	16,656	552,363	104.61
Melrose .	—	—	—	—	—	—	—	—	—	—	—	—	5,223	3,024	26,223	25,159	27,082	204,718	51,998	343,427	65.04
Milton .	—	—	—	—	—	—	—	—	—	—	—	—	3,415	72	61,854	23,980	85,043	225,955	8,330	408,649	77.40
Nahant .	—	—	—	—	—	—	—	—	—	—	—	—	—	10,444	5,550	11,550	13,643	38,686	57,668	137,541	26.05
Newton .	—	—	—	—	—	—	—	—	—	—	36,250	—	7,445	—	86,378	8,040	182,556	703,124	58,380	1,082,173	204.96
Quincy .	—	—	—	—	—	—	—	—	—	—	15,450	—	32,123	—	77,053	91,864	245,826	450,989	64,712	978,017	185.23
Revere .	—	—	—	—	—	—	—	—	—	—	—	—	10,600	7,416	39,343	36,069	72,325	144,918	55,155	365,826	69.29
Somerville .	—	—	—	—	—	—	—	—	—	—	5,577	367	10,094	7,942	113,258	95,180	114,923	214,317	15,865	577,523	109.38
Stoneham .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10,725	175	5,110	135,420	19,887	171,317	32.45
Swampscott .	—	—	—	—	—	—	—	—	—	—	—	—	—	3,721	6,714	21,800	7,375	119,010	5,816	164,436	31.14
Watertown .	—	—	—	—	—	—	—	—	—	—	—	—	2,991	7,993	9,642	41,340	93,967	182,767	3,242	341,942	64.76
Winthrop .	—	—	—	—	—	—	—	—	—	—	5,151	—	4,327	—	4,598	24,198	69,656	55,609	27,294	190,833	36.14
Total feet .	125,275	17,569	13,486	239,383	26,849	22,239	7,274	107,712	168,688	198,673	299,026	367	512,442	85,822	2,479,536	1,173,821	2,664,095	5,337,884	571,061	14,051,202	—
Total miles .	23.73	3.33	2.55	45.34	5.09	4.21	1.38	20.40	31.95	37.63	56.63	.07	97.05	16.25	469.61	222.31	504.56	1010.96	108.16	—	2,661.21

TABLE NO. 22. — *Number of Service Pipes, Meters, Per Cent of Services Metered, Fire Services and Fire Hydrants in the Several Cities and Towns in the Metropolitan Water District, December 31, 1932.*

CITY OR TOWN	Services	Meters	Per Cent of Services Metered	Services Used for Fire Purposes Only	Fire Hydrants
Arlington	7,232	7,232	100.00	32	853
Belmont	4,589	4,589	100.00	7	481
Boston	100,951	100,951	100.00	3,109	11,955
Chelsea	5,887	5,887	100.00	139	449
Everett	7,377	7,377	100.00	52	624
Lexington	2,502	2,502	100.00	16	497
Malden	9,768	9,768	100.00	76	729
Medford	10,780	10,780	100.00	34	1,050
Melrose	5,920	5,920	100.00	25	466
Milton	4,134	4,134	100.00	3	671
Nahant	918	918	100.00	2	144
Quincy	16,911	16,885	99.85	51	1,760
Revere	6,408	6,400	99.88	9	478
Somerville	14,122	13,966	98.90	121	1,394
Stoneham	2,394	2,389	99.79	3	189
Swampscott	2,727	2,727	100.00	7	280
Watertown	6,071	6,071	100.00	41	675
Winthrop	3,834	3,834	100.00	7	378
District Supplied	212,525	212,330	99.91	3,734	23,073
Brookline	7,788	7,782	99.92	43	991
Newton	14,883	14,883	100.00	100	1,556
Total District	235,196	234,995	99.91	3,877	25,620

TABLE No. 23. — *Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base for Each Month at Stations on Metropolitan Water Works during 1932.*

1932 MONTH	LOW SERVICE										SOUTHERN HIGH SERVICE									
	WATERTOWN, PLEASANT STREET AT WALTHAM LINE		BELMONT WATER WORKS SHOP, WAVER- LEY STREET		ALLSTON ENGINE HOUSE, HARVARD STREET		BOSTON, BOWDOIN SQUARE ENGINE HOUSE		MEDFORD, NEAR MYSTIC RESERVOIR		SOMERVILLE PUBLIC LIBRARY, HIGHLAND AVENUE		MALDEN WATER WORKS SHOP, GREEN STREET		CHELSEA COURT HOUSE		BOSTON, BOWDOIN SQUARE ENGINE HOUSE		QUINCY, FORBES HILL TOWER	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Maximum	Minimum	Maximum	Maximum	Minimum	Maximum	Minimum
January . .	182	170	186	171	186	163	157	145	179	167	170	153	166	156	158	148	249	227	233	207
February . .	182	170	184	171	184	159	157	146	179	167	167	153	167	156	158	146	249	226	233	210
March . .	182	170	183	171	186	163	157	149	180	169	168	153	166	151	158	148	249	228	234	209
April . .	194 ¹	188	185	171	186	163	157	145	180	168	168	154	165	158	158	148	249	226	234	209
May . .	196	191	186	160	187	161	157	148	181	167	169	153	165	156	158	146	249	224	234	193
June . .	196	191	183	155	191	163	157	145	181	167	168	153	165	158	158	146	247	221	233	193
July . .	198	191	185	153	187	161	152	136	181	168	173	153	165	158	155	143	247	219	234	193
August . .	198	193	187	167	187	161	152	143	181	167	173	157	165	158	158	144	247	219	234	216
September . .	195	191	183	167	186	159	152	143	180	167	171	156	164	156	158	144	245	218	239	213
October . .	196	191	181	167	184	159	152	143	180	167	171	155	165	156	158	144	245	219	237	211
November . .	198	191	194	167	178	156	152	141	180	166	169	153	165	156	160	144	245	224	239	211
December . .	198	194	197	190	175	167	152	143	172	166	165	160	165	156	158	143	245	224	237	213
Averages . .	193	186	186	168	185	161	155	144	180	167	169	154	165	156	158	145	247	223	235	207

¹After April 1 gage moved from Watertown Water Works Office.

TABLE NO. 23. — *Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base, etc. — Concluded.*

MONTH	SOUTHERN HIGH SERVICE — Concluded				NORTHERN HIGH SERVICE							
	MILTON, ADAMS STREET AT CANTON AVENUE		QUINCY WATER WORKS SHOP		SOMERVILLE WATER WORKS SHOP		REVERE WATER WORKS SHOP, BROADWAY		LYNN ENGINE HOUSE, UNION SQUARE		WINTHROP TOWN HALL, HERMAN STREET	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
January	—	—	233	192	256	243	265	251	263	243	189	182
February	—	—	233	194	254	243	265	248	263	245	189	184
March	—	—	233	192	256	243	265	251	263	247	194	184
April	241 ¹	218	233	192	259	243	267	248	266	247	196	189
May	241	204	233	184	259	231	267	253	266	213	194	182
June	241	209	231	186	256	243	267	248	266	208	194	182
July	239	197	234	182	252	231	267	246	266	171	198	180
August	241	221	230	205	254	219	267	251	259	213	191	173
September	239	218	230	205	254	248	267	253	261	215	194	184
October	239	221	230	200	256	249	267	251	266	238	198	185
November	241	218	234	207	256	249	269	253	268	241	198	173
December	240	216	234	202	256	249	267	255	266	240	198	177
Averages	240	214	232	195	256	241	267	251	264	227	194	181

¹Gage put in service April 8, 1932.

APPENDIX No. 4

CONTRACTS MADE AND PENDING DURING
Contracts relating to the

1 Number of Contract	2 WORK	3 Number of Bids	AMOUNT OF BID		6 Contractor
			4 Next to Lowest	5 Lowest	
1 55 ²	Section 82, Mill Brook Valley Sewer, North Metropolitan System, in Arlington.	21	\$10,866 00	\$8,080 00 ¹	N. Cibotti Co., Hyde Park, Mass.

Contracts relating to the

2 42 ²	Section 114, New Neponset Valley Sewer, South Metropolitan System, in Canton.	14	118,257 00	105,950 00 ¹	V. Barletta Co., Roslindale, Mass.
3 36-A ²	Part of Section 109, New Neponset Valley Sewer, South Metropolitan System, in Milton.	10	187,343 50	179,585 00 ¹	V. Barletta Co., Roslindale, Mass.
4 37-A ²	Part of Section 110, New Neponset Valley Sewer, South Metropolitan System, in Milton.	8	247,568 00	225,704 00 ¹	J. H. Ferguson Co., Providence, R. I.
5 46 ²	Section 117, New Neponset Valley Sewer, South Metropolitan System, in Norwood.	13	104,489 40	96,062 50 ¹	J. F. Fitzgerald Construction Co., Boston, Mass.
6 47 ²	Section 119, New Neponset Valley Sewer, South Metropolitan System, in Canton.	11	47,622 00	42,112 80 ¹	Frank W. Christy, Providence, R. I.
7 50 ²	Section 118, New Neponset Valley Sewer, South Metropolitan System, in Norwood and Walpole.	15	61,442 50	58,715 00 ¹	C. & R. Construction Co., Boston, Mass.
8 51 ²	Squantum Pumping Station, including receiving reservoir pump well, building foundations, and connecting sewers.	15	39,017 50	37,630 00 ¹	A. D. Daddario, Mattapan, Mass.
9 52	Section 125, Braintree-Weymouth Sewer, South Metropolitan System, in Braintree and Weymouth.	8	105,325 90	100,951 00 ¹	George M. Bryne, Boston, Mass.
10 53 ²	Proposed pumping units for the Squantum Pumping Station, South Metropolitan System, in Quincy.	6	7,780 00	7,775 00 ¹	Turbine Equipment Co. of New England Boston, Mass.
11 54	Section 120, New Neponset Valley Sewer, South Metropolitan System, in Canton.	17	52,500 00 ¹	44,400 00	Anthony Baruffaldi, West Somerville, Mass.

¹Contract based upon this bid.

²Contract completed.

THE YEAR 1932. — SEWERAGE DIVISION.
North Metropolitan System

7	8	9	10	
Date of Contract	Date of Completion of Work	Prices of Principal Items of Contracts made in 1932	Value of Work done Dec. 31, 1932	
Dec. 23, 1931	June 20, 1932	- - -	\$10,940 29	1

South Metropolitan System

Oct. 23, 1930	Aug. 23, 1932	- - -	148,874 99	2
Nov. 13, 1930	Aug. 3, 1932	- - -	202,735 41	3
Nov. 13, 1930	July 18, 1932	- - -	253,338 77	4
Mar. 26, 1931	Aug. 1, 1932	- - -	113,983 39	5
Mar. 26, 1931	Mar. 22, 1932	- - -	53,018 67	6
Aug. 6, 1931	July 15, 1932	- - -	67,096 00	7
Aug. 24, 1931	Apr. 15, 1932	- - -	38,551 98	8
Nov. 5, 1931	-	- - -	97,054 00	9
Dec. 10, 1931	June 1, 1932	- - -	7,775 00	10
Dec. 10, 1931	-	- - -	53,500 00	1

APPENDIX No. 4

CONTRACTS MADE AND PENDING DURING THE
Contracts relating to the

1 Number of Contract	2 WORK	3 Number of Bids	AMOUNT OF BID		6 Contractor
			4 Next to Lowest	5 Lowest	
12 56	Section 121, New Neponset Valley Sewer, South Metropolitan System, in Canton and Stoughton.	19	\$53,871 00	\$53,023 00 ¹	V. Barletta Company, Boston, Mass.
13 57 ²	Squantum Pumping Station Building substructure, South Metropolitan system, in Quincy.	24	4,950 00	3,797 00 ¹	M. Spinelli & Sons Co., Inc., Boston, Mass.
14 58 ²	Section 123, Braintree-Weymouth Sewer, South Metropolitan System, in Quincy and Weymouth.	3	103,045 00 ¹	98,280 50	Bay State Dredging & Contracting Co., East Boston, Mass.
15 59	Quincy Pumping Station engine and centrifugal pump, South Metropolitan System in Quincy.	5	6,450 00	6,390 00 ¹	Turbine Equipment Co. of New England, Boston, Mass.
16 60	Section 124, Braintree-Weymouth Sewer, South Metropolitan, System, in Weymouth.	22	93,398 00 ¹	63,583 45	C. & R. Construction Company, Boston, Mass.
17 61	Proposed pumping equipment, Braintree-Weymouth Pumping station, South Metropolitan System, in Quincy.	6	29,250 00	28,975 00 ¹	Turbine Equipment Co., of New England, Boston, Mass.
18 62	Section 122, Braintree-Weymouth Sewer, South Metropolitan, System, in Quincy.	21	78,790 00 ¹	64,920 00	A. D. Daddario, Boston, Mass.

¹Contract based upon this bid.²Contract completed.

APPENCIS No. 4

YEAR 1932. — SEWERAGE DIVISION. — Continued.
South Metropolitan System. — Continued.

7	8	9	10	
Date of Contract	Date of Completion of Work	Prices of Principal Items of Contracts made in 1932	Value of Work done Dec. 31, 1932	
Mar. 31, 1932	—	For earth excavation and refilling in trench for 27" by 36" concrete sewer, \$6.00 per lin. ft.; for earth excavation and refilling in trench, for 20" vitrified pipe sewer and laying of pipe, \$6.00 per lin. ft.; for earth or rock excavation or both and refilling in tunnel for 27" x 36" masonry sewer, \$25.00 per lin. ft.; for Portland cement brick masonry in manholes and special structures in trench, \$22.50 per cu. yd.; for Portland cement brick masonry in tunnel and in tunnel shafts, \$40.00 per cu. yd.; for Portland cement concrete masonry in trench and special structures, \$6.00 per cu. yd.; for Portland cement, concrete masonry in tunnel and tunnel shafts, \$10.00 per cu. yd.; for Portland cement boulder concrete masonry in trench, \$1.00 per cu. yd.; for bank gravel refilling in trench around pipe sewer, \$1.00 per cu. yd.; for rock excavation in trench, \$1.00 per cu. yd.	23,760 00	12
Mar. 10, 1932	June 1, 1932	For furnishing materials and building new Squantum Pumping Station, complete with all appurtenances, lump sum.	3,797 00	13
May 26, 1932	Dec. 28, 1932	For earth excavation and refilling in harbor bed for 48" cast-iron pipe siphon including foundations, \$28.00 per lin. ft.; for furnishing and placing, 48" cast-iron pipe, \$58.00 per ton; for Portland cement brick masonry in manholes, head-houses and special structures, \$35.00 per cu. yd.; for Portland cement concrete masonry in sewer head-houses, and appurtenances in trench \$32.00 per cu. yd.; for riprap paving with Portland cement concrete joints, \$6.50 per cu. yd.; for rock excavation in siphon and head-house trenches, \$35.00 per cu. yd.	123,519 68	14
June 2, 1932	—	For furnishing f.o.b. cars Quincy one pumping unit consisting of engine and centrifugal pump and appurtenances, lump sum.	4,912 00	15
July 21, 1932	—	For earth excavation and refilling in trench for 57" by 60" concrete sewer and 42" cast-iron pipe siphon and appurtenances, \$6.00 per lin. ft.; for earth or rock excavation or both and refilling in trench or tunnel for 57" by 60" concrete sewer \$30.00 per lin. ft.; for Portland cement brick masonry in manholes, shafts and special structures and in sewer in trench and tunnel, \$20.00 per cu. yd.; for Portland cement concrete for sewer and special structures in trench and tunnel, \$10.00 per cu. yd.; for riprap paving jointed with Portland cement concrete, \$5.00 per cu. yd.; for rock excavation in trench, \$10.00 per cu. yd.	41,680 60	16
Aug. 18, 1932	—	For furnishing and installing two pumping units complete for operation, including two Diesel engines directly connected with two non-clogging centrifugal sewerage pumps, and all accessories, including all piping, valves, oil tanks, generating sets, priming systems, oiling systems, starting systems, switchboard and meters, storage batteries, wiring, cooling systems, mufflers, bed-frames and all other parts, materials or devices necessary to complete the units ready for active service, lump sum.	—	17
Oct. 27, 1932	—	For earth excavation and refilling in trench, for 57" by 60" and 60"x63" concrete sewer, \$5.50 per lin. ft.; for Portland cement brick masonry in manholes and special structures, \$25.00 per cu. yd.; for Portland cement concrete masonry in trench and special structures, \$7.00 per cu. yd.; for Portland cement boulder concrete masonry in trench, \$10.00 per cu. yd.; for spruce piles in trench in place, \$.20 per lin. ft.; for rock excavation in trench, \$15.00 per cu. yd.	10,365 00	18

APPENDIX No. 4

CONTRACTS MADE AND PENDING DURING THE
Contracts relating to the

1 Number of Contract	2 WORK	3 Number of Bids	AMOUNT OF BID		6 Contractor
			4 Next to Lowest	5 Lowest	
19 64	Section 87, Extension of High - Level Sewer, South Metropolitan System in Brighton and Newton.	17	74,945 00	62,957 50 ¹	P. DeCristofaro, Boston, Mass.

APPENDIX No. 4

YEAR 1932 — SEWERAGE DIVISION. — Continued.
South Metropolitan System. — Continued.

7	8	9	10	
Date of Contract	Date of Completion of Work	Prices of Principal Items of Contracts made in 1932	Value of Work done Dec. 31, 1932	
Dec. 29, 1932	—	For earth excavation and refilling in trench for 63'' by 66'' concrete sewer, \$9.00 per lin. ft.; for earth or rock excavation or both and refilling in tunnel for 63'' by 66'' concrete and brick sewer, \$20.00 per lin. ft.; for Portland cement brick masonry in man-holes and special structures in trench, \$20.00 per cu. yd.; for Portland cement brick masonry in tunnel and tunnel shafts, \$25.00 per cu. yd.; for Portland cement concrete masonry in trench, and special structures, \$6.00 per cu. yd.; for Portland cement concrete masonry in tunnel and tunnel shafts, \$8.00 per cu. yd.; for Portland cement boulder concrete masonry in trench and tunnel, \$5.00 per cu. yd.; for street surfacing of type similar to existing construction, \$1.50 per sq. yd.; for granolithic side-walk of type similar to existing construction, \$1.25 per sq. yd.; for resetting edgestone, \$0.25 per lin. ft.; for rock excavation in trench, \$2.00 per cu. yd.	—	19

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